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The Province of Alberta

IN THE MATTER OF THE PUBLIC
UTILITIES ACT

—and—

IN THE MATTER OF rates charged by
The Valley Pipe Line Company
Limited

G. M. BLACKSTOCK, Esq., K.C.
Public Utilities Commissioner

Session:

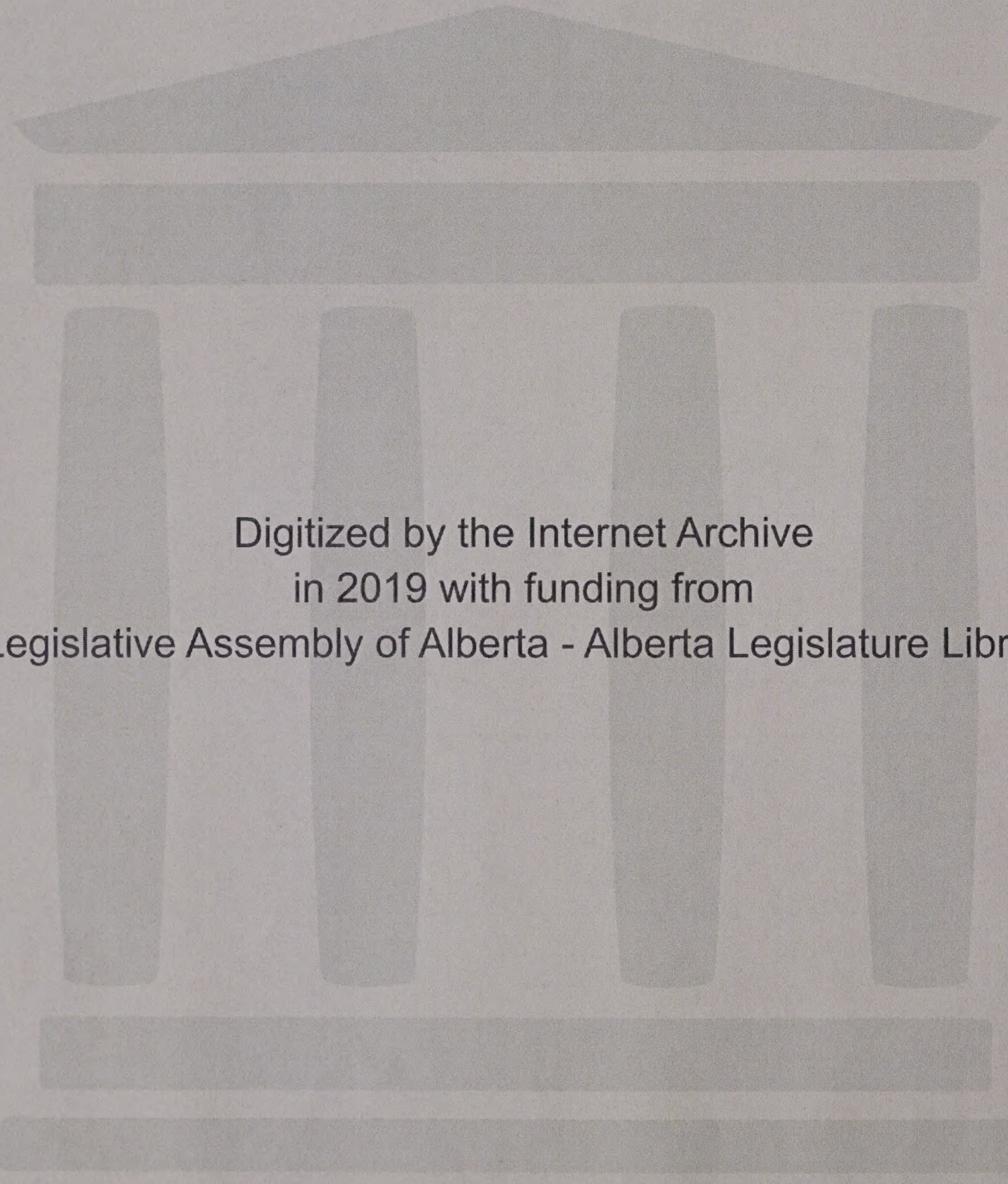
CALGARY, Alberta APRIL 14th, 1944.

VOLUME 27

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FRIDAY, - THE FOURTEENTH DAY OF APRIL, A.D. 1944.

Before:	:	IN THE MATTER OF "The Pub-
	:	lic Utilities Act":
The Board of Public Utility	:	
Commissioners for the	:	AND IN THE MATTER OF an
Province of Alberta	:	investigation by the Board
	:	of Public Utility Com-
	:	missioners into the rates
	:	charged by the Valley Pipe
	:	Line Company Limited.
	:	
	:	

D E C I S I O N

These proceedings were initiated by the Board of Public Utility Commissioners under the provisions of Section 65 of The Public Utilities Act, for the purpose of conducting an investigation into the rates charged by the Valley Pipe Line Company Limited (hereinafter called "the Company") for gathering and transporting oil from the Turner Valley oil field through its pipe lines to the City of Calgary. Notice of intention to hold a hearing was given by advertisement in the Calgary daily press and it was intimated that following upon the hearing, the Board would fix such just and reasonable rates for the services rendered by the Company to its customers as the evidence adduced might warrant.

The matter arises in this way. By a Commission dated 12th October, 1936, issued under The Public Inquiries Act, the Honourable the late Mr. Justice McGillivray and L. R. Lipsett, Esq., K.C., were appointed as Commissioners to inquire inter alia into the rates charged by Royalite Oil Company Limited (hereinafter called "Royalite") for gathering and transporting petroleum by pipe line from

Before:

The Board of ...

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Turner Valley to Calgary and to inquire further what the fair and equitable rates for such services should be. In their report, the Commissioners recommended the rates hereinafter referred to.

These rates were approved by Order-in-Council dated 8th June, 1939, and following upon such approval the Board, pursuant to the directions contained in Section 5, Subsection (2) of The Pipe Line Act, made an order on 30th June, 1939, that the rates for gathering, transporting, distributing, handling and delivery of oil by means of pipe line should be:

- (a) a rate of $9\frac{1}{2}$ cents per barrel for the movement of petroleum and petroleum products whether from the wells, absorption plants or otherwise in the Turner Valley oil field to refiners' storage and terminal storage tanks in Calgary.
- (b) a rate of $2\frac{1}{2}$ cents per barrel for loading petroleum or petroleum products into tank trucks; and
- (c) a rate of $2\frac{1}{2}$ cents per barrel for loading petroleum or petroleum products into tank cars.

These rates became effective on and after 3rd July, 1939. By a subsequent order, dated 10th April, 1941, effective immediately, the Board, pursuant to another recommendation made by the Commissioners and duly approved by Order-in-Council, directed that a deduction of not more than $\frac{3}{4}$ of 1 per cent should be made to cover pipe line losses of crude oil gathered, handled and transported, incurred between the source of supply and the terminal of the pipe line. The deduction of 2 per cent theretofore made by the Royalite to cover naphtha pipe line losses was not disturbed by the Commissioners or by the Board.

Prior to the dates of these orders, the gathering, handling and transportation rate charged by Royalite was 15 cents per barrel.

Prior to 3rd July, 1939, the oil gathering and transportation system was owned by Royalite (a subsidiary of Imperial Oil Limited) and was operated by what was known as the "Pipe Line Division" of that company. The Valley Pipe Line Company Limited was incorporated for the purpose of taking over and operating the Pipe Line Division and the bulk of the assets used in Royalite's pipe line operations were transferred to the new company. Its capital was 150,000 common shares of no par value, having for purposes of the capital structure a value of \$1,474,511.11.

In arriving at a service rate of 9½ cents per barrel, the Commissioners first established a rate base as follows:

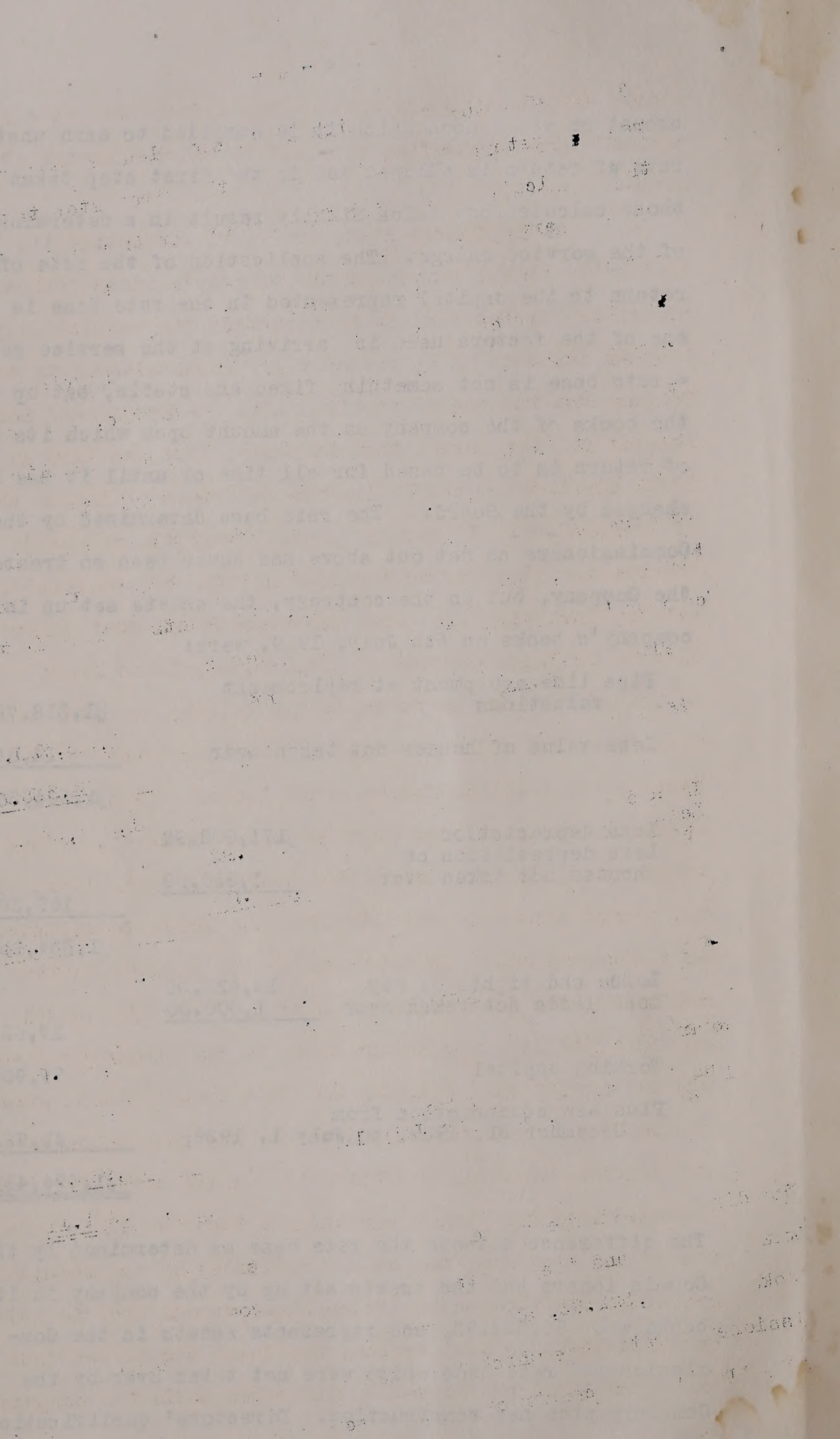
Pipe line equipment at replacement valuations		\$1,380,663.00
Administration and overhead during construction		<u>138,066.30</u>
		\$1,518,729.30
Less depreciation		<u>171,008.92</u>
		\$1,347,720.38
Utility and service assets	\$186,000.00	
Less depreciation	<u>59,369.34</u>	
		<u>126,630.66</u>
		\$1,474,351.04
Lands and rights-of-way		18,633.00
Working capital		<u>80,000.00</u>
Rate base as at December 31, 1938		<u><u>\$1,572,984.04</u></u>

It should be noted that a rate base is nothing more than a compilation and valuation of the used and useful assets of a utility company, or, in other words, the

amount or value upon which it is entitled to earn whatever rate of return is allowed and is the first step taken in those calculations which finally result in a determination of the service charge. The application of the rate of return to the capital represented in the rate base is only one of the factors used in arriving at the service rate. A rate base is not something fixed and static, set up in the books of the company as the amount upon which its rate of return is to be based for all time or until it has been changed by the Board. The rate base determined by the Commissioners as set out above has never been so treated by the Company, but on the contrary, the assets set up in the company's books on 6th July, 1939, were:

Pipe line equipment at replacement valuations		\$1,518,729.30
Less value of houses not taken over		<u>14,388.00</u>
		\$1,504,341.30
Less depreciation	\$171,008.92	
Less depreciation on houses not taken over	<u>1,620.09</u>	
		<u>169,388.83</u>
		\$1,334,952.47
Lands and rights of way	\$ 18,633.00	
Less lands not taken over	<u>1,000.00</u>	
		17,633.00
Working capital		79,950.00
Plus new construction from December 31, 1938, to July 1, 1939		<u>41,925.64</u>
		<u>\$1,474,461.11</u>

The difference between the rate base as determined by the Commissioners and the assets set up by the company in its books was \$98,522.93, and represents assets in the Commissioners' rate base which were not taken over by the Company plus new construction. Directors' qualification



shares valued at \$50.00 make up the difference between the capital structure before referred to and the amount shown above.

In September 1940, the Board instructed its Auditor to make a survey of the Company's operations as disclosed by its books so as to ascertain the relationship between the rate of $9\frac{1}{2}$ per cent per annum allowed to the Company and the actual profits made. A Profit and Loss Account for the period from 6th July, 1939, to 31st August, 1940, disclosed a profit (before deduction of income tax) of \$449,268.67. It should be noted that the company's revenue for this period included an item of \$60,901.70, arising from pipe line loss adjustments and that expenditures included an item of \$16,145.15 paid to Imperial Oil as rental for storage tanks at the Calgary terminal of the pipe line, and a further item of \$20,000.00 set up as a reserve for possible future major losses arising from breaks in the pipe line or other major disaster. After making provision for income tax to 31st August, 1940, the net profit disclosed was \$308,907.22. After an adjustment in the depreciation account made by the Board's Auditor to conform to the Commissioners' method of arriving at the service rate (the adjustment being in the Company's favour), the net profit was \$269,523.25. This amount was in excess of the $9\frac{1}{2}$ per cent return allowed by the Commissioners on the adjusted rate base. During the period covered by this survey, there had been a substantial increase in the throughput of the line over the amount estimated by the Commissioners and, notwithstanding the apparent excess profits made by the company in that period, the Board considered that the rates fixed should not be disturbed until the company

had been in operation for a longer period of time.

A similar survey was made in 1942 covering the years 1940 and 1941. The net profit earned by the company as disclosed by the books was \$209,601.69 for the year 1940 and \$243,341.56 for the year 1941, representing a return of 13.32 per cent and 15.47 per cent respectively on the rate base determined by the Commissioners. These percentages would be greater if computed on the assets set up on the company's books as at 6th July, 1939. An adjustment made in the depreciation figures to conform to the calculations made by the Commissioners in arriving at the service rate of $9\frac{1}{2}$ cents per barrel, reduced these profits to 12.12 and 15.18 per cent for 1940 and 1941, respectively. The difference between current assets and current liabilities for these years was \$151,458.34 and \$296,986.10, respectively, and if these figures are considered to represent working capital they are very greatly in excess of the sum of \$80,000.00 allowed by the Commissioners for that purpose. As already mentioned, the Commissioners considered, after a review of all relevant factors, that $9\frac{1}{2}$ per cent per annum was a fair and reasonable rate of return to be allowed, so that a review of the figures resulting from the Board's investigation made it obvious that a formal hearing was necessary and that following thereupon just and reasonable rates to be charged thereafter should be fixed.

The inquiry commenced on 15th November, 1943, and continued intermittently for twenty-five days until 10th February, 1944. The Government of the Province considered that the investigation was directed into and affected matters of public interest and instructed J. J. Frawley, Esq., K.C., to represent the public interest. E. J.

Chambers, Esq., K.C., and J. Ragnar Johnson, Esq., Barrister, represented the Company.

On an application for directions heard on 12th October, 1943, the Board ordered that if any person affected by the matters in issue established that the company's earnings were in excess of $9\frac{1}{2}$ per cent per annum, a *prima facie* case for a reduction would thereby have been made out, in which case the onus would be on the Company to show cause why the rates should not be altered. That procedure was followed at the hearing which was in general directed towards:-

- (1) the profits made by the company between 6th July, 1939, and 30th September, 1943, and their relationship to a new rate base;
- (2) the method of computing and the disposition of profits in excess of $9\frac{1}{2}$ per cent per annum;
- (3) the amount of recoverable oil in the Turner Valley field and the annual throughput;
- (4) the rate base upon which future rates should be fixed;
- (5) the rate of return on the rate base;
- (6) depreciation;
- (7) the operating charges to be allowed in determining the service rate with special consideration being given to:
 - (a) charges for terminal storage;
 - (b) oil in tank bottoms and pipe lines;
 - (c) working capital;
 - (d) the incidence of income taxation in relation to pipe line charges; and
 - (e) reserve for major losses;
- (8) pipeline losses and deductions therefor.

Mr. K. J. Morrison, F.C.A., called by Mr. Frawley, produced and dealt with a summary of the company's operating results from 6th July, 1939, to 30th September, 1943, (hereinafter called "the period").

The summary (Exhibit 2) disclosed a profit for the period of £657,423.18. Dividends paid to Royalite, the principal shareholder, amounted to £675,000.00 during the period, leaving the earned surplus account in debit in the sum of £17,576.82. Charges to depreciation plus losses on retirements during the period amounted to £964,710.11. If it is assumed that the rate base as originally fixed by the Commissioners is the standard by which the percentage rate of profits is to be gauged and if it is further assumed that the rate base remained static during the period, then the company earned the sum of £18,293.39 in excess of its fixed rate of $9\frac{1}{2}$ per cent. It happens, however, that on 30th September, 1943 - after this inquiry had been instituted and after a date had been fixed for its commencement - the company decided to alter the basis upon which its depreciation should be calculated from the straight line to the unit method and put a depreciation adjusting entry of £255,294.88 through its books. The propriety of instituting this method of calculating depreciation and the accuracy of the basis upon which it was done will be discussed later. Had it not been for this adjusting entry, the profits in excess of $9\frac{1}{2}$ per cent per annum for the period, calculated upon the original rate base, would have been £273,588.27. It follows that the method of computing profits and the basis upon which depreciation should be charged are factors of importance. As the latter increases, the former will decrease or may even disappear.

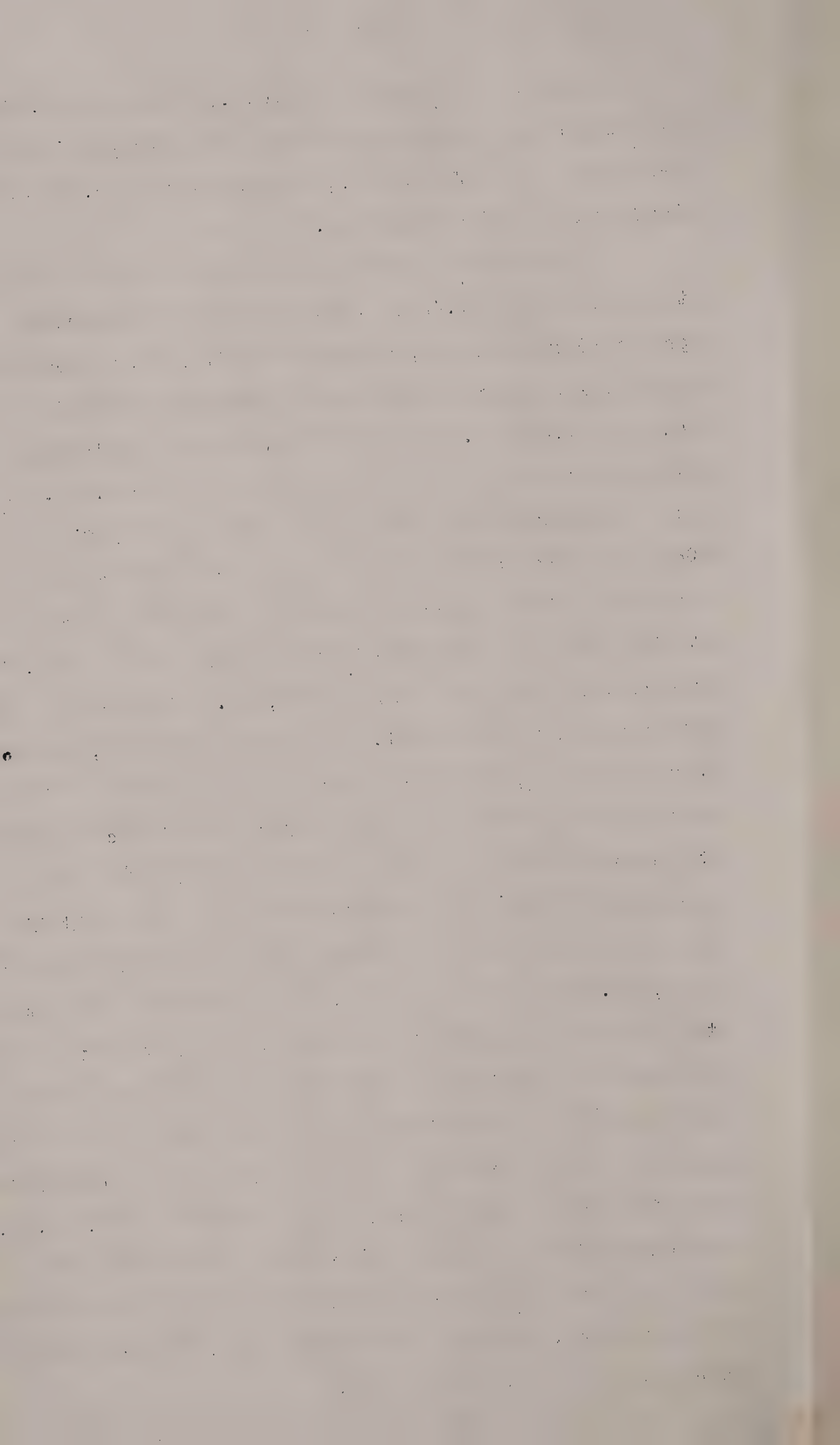


Exhibit 2 shows that the Company's gross revenue from the deductions made by it to cover pipe line losses was:

6th July 1939 to 31st December, 1939	\$28,572.80
1940	65,471.38
1941	52,046.33
1942	43,908.30
1st January 1943 to 30th September, 1943	<u>32,096.80</u>
	<u>\$222,095.61</u>

In 1940, the Company charged against this revenue the sum of \$43,165.69 being the value of oil required to cover tank bottoms to a point above the outlet and to fill the pipe lines, a procedure necessary to enable the system to function. In any pipe line operation, and in particular when volatile oils are being handled, losses will occur through leakage and evaporation. The difference between the allowable deductions made and the actual losses for the period expressed in terms of money is \$222,095.61. The item of \$43,165.69 will be discussed later.

The statement (still assuming a static rate base) shows the relationship between the arithmetic return of 2.578 cents per barrel on the investment as shown in the Commissioners' service rate computation and the actual rate earned which was 3.5125 cents per barrel for the half year of 1939, 2.6483 cents per barrel for 1940, 2.6089 cents per barrel for 1941, 2.6159 cents per barrel for 1942, and 1.155 cents per barrel for the first nine months of 1943.

In their calculations the Commissioners estimated that the throughput of the line would be 6,000,000 barrels per annum.

The throughput of oil during the period was:

	<u>Barrels</u>
6th July, 1939, to 31st December, 1939	3,934,748
1940	7,914,680
1941	9,327,507
1942	9,449,928
1st January, 1943, to 30th September, 1943	<u>6,700,136</u>
	<u>37,326,999</u>

Mr. Morrison produced a further statement of earnings and return on investment (Exhibit 3) based firstly upon the company's twelve-year life depreciation plan and secondly on depreciation adjusted to the unit method. In the latter case he used as the denominator an estimated total recoverable barrelage as at 1st January, 1939, of 70,322,788 barrels, this being the figure used by the company when calculating the depreciation adjustment entry of \$255,294.88.

Mr. Morrison's calculations are based upon a variable rate base which adjusted as at 3rd July, 1939, was \$1,626,761.43, less the reserve for depreciation of \$169,388.83, leaving a net amount of \$1,457,372.60. This amount is reconciled with the rate base fixed by the Commissioners as follows:

Rate base fixed by the Commission	\$1,572,984.04
Deduct value of houses and land not taken over	<u>15,388.00</u>
	\$1,557,596.04
Less Utility and service assets not taken over	<u>126,630.66</u>
	\$1,430,965.38
Add depreciation on houses not taken over	<u>1,620.09</u>
	\$1,432,585.47
To which should be added new construction from 1st January, 1939, to 6th July, 1939	<u>24,787.13</u>
Rate base as arrived at in Exhibit 3, 1st column	<u>\$1,457,372.60</u>

The rate base used for subsequent years in Exhibit 3 is made up by adding capital additions made during each year and deducting depreciation as shown by the Company's books. The rate base thus arrived at each year is as follows:

1939 (Six months)	\$1,457,372.60
1940	1,462,871.87
1941	1,480,863.26
1942	1,435,749.12
1943 (Nine months)	1,123,430.25

The substantial decrease in the rate base used by Mr. Morrison is due to the increase in depreciation reserve resulting from the change over to the unit method.

The profits for each year during the period using the variable rate bases above mentioned and depreciation on the straight line method are shown in terms of percentage, and profits over 9½ per cent are expressed in percentages and actual amounts, all as follows:

	<u>6 months</u> <u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>
Return per- centage	18.9668	14.328	16.4324	17.2167	12.564
Excess over 9½%	9.4168	4.828	6.9324	7.7167	3.064
Amount of excess	\$68,618.93	\$70,627.44	\$102,659.36	\$110,792.45	\$25,816.43

The amount of excess for the period 1939 to 1942 is \$352,698.18 and for the whole period is \$378,514.61. The figure for 1943 is relatively small because of the depreciation adjustment before referred to.

The comparable figures using the unit method of depreciation are:

	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>
Return per- centage	17.02	12.2544	13.4585	14.686	12.4266
Excess over 9½%	7.53	2.7544	3.9585	5.186	2.9266
Amount of excess	\$54,870.08	\$39,829.04	\$55,902.46	\$66,306.33	\$24,658.73

The total for the period 1939 to 1942 is \$216,907.91 and for the whole period is \$241,566.64.

These figures merely represent what the profits would have been had the unit method of depreciation been used from 3rd July, 1939, and had the income tax authorities allowed income tax to be computed on that basis.

The points made by Mr. Morrison can be illustrated in another way. The service rate of 9½ cents per barrel (estimated gross revenue) which was considered by the Commissioners sufficient to meet all operating expenses and depreciation, and to provide 9½ per cent per annum on the rate base can be related to gross earnings per barrel, as follows:

	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>
Estimate	9.5¢	9.5¢	9.5¢	9.5¢	9.5¢
Actual	10.2220¢	9.7818¢	10.058¢	9.9646¢	9.979¢
Excess	.7220¢	.2818¢	.558¢	.4646¢	.479¢

These excess figures include revenue from pipe line adjustment account.

The revenue derived by the company from loading oil into tank cars and tank trucks need not be considered. The loading facilities are owned by Imperial Oil Limited and the actual work of loading was done by that company

and they were paid for it, so that the Valley Pipe Line Company's account in this respect is in balance.

Mr. Morrison also produced a statement showing the value of capital assets as at 6th July, 1939, and with additions during each year regarding which no comment is required.

In the Commissioners' report, the calculation made to arrive at the service rate is as follows:

	<u>Annual Amount</u>	<u>Amount per barrel</u>
Direct pipe line operating expenses	\$168,360.00	2.806
Losses on sales and retirements	1,500.00	.025
Administration, utility and service unit expenses	56,280.00	.938
Income tax	42,415.85	.707
Allowance for capital Expenditures not to be added to rate base	69,500.00	1.158
	<u>\$338,055.85</u>	<u>5.634</u>
<u>Amortization</u>		
Pipe Line assets	\$70,654.66	1.178
Utility and service assets	6,573.92	.110
	<u>\$415,284.43</u>	<u>6.922</u>
Return on investment	<u>150,383.48</u>	<u>2.506</u>
	<u>\$565,667.91</u>	<u>9.428</u>

It will be observed that the various items going to make up the service charge (fixed at $9\frac{1}{2}$ cents per barrel) are shown in the second column as a rate per barrel applicable to each item. In the Board's opinion, these figures are nothing more than an arithmetic calculation based upon an estimated throughput. In his cross-examination, Mr.

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Age Group	1970 (%)	1980 (%)	1990 (%)
15-24	~15	~25	~35
25-34	~45	~45	~45
35-44	~45	~45	~45
45-54	~45	~45	~45
55-64	~45	~45	~45
65+	~10	~10	~10

10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 8

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Chambers very ably endeavoured to relate these barrelage rates to the actual operating results. For instance, the return on the investment is stated to be \$150,383.48, equal to 2.506 cents per barrel. He deduced that for four and one-quarter years this amount would represent a total sum of \$639,129.79. He then took the average throughput for the period as 8,769,293 barrels. The direct pipe line operating expenses are shown on the Commissioners' computation at \$168,360.00 or 2.806 cents per barrel, and after making certain necessary adjustments, Mr. Chambers arrived at a total sum of \$195,480.00 as representing the estimated annual cost of direct pipe line operating expenses and utility service unit expenses or 3.285 cents per barrel, based upon a 6,000,000 barrel throughput. He relates these figures to the statement of revenue and expenditure shown on Exhibit 2. The actual expenditure for pipe line operation was \$1,269,321.74 or an annual average of \$298,663.00, which is also an average of 3.409 cents per barrel. Each item in the Commissioners' service rate calculation as applied to the actual cost was treated in the same way and produced the following results:

| | <u>Commissioners'</u>
<u>Calculation</u> | <u>Average as</u>
<u>shown in</u>
<u>Company's</u>
<u>books</u> |
|---------------------------|---|--|
| Operating expense | 3.258 | 3.409 |
| Administration (adjusted) | .486 | .511 |
| Amortization | 2.471 | 2.591 |
| Income tax | .707 | 1.647 |
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| | 6.922 | 8.158 |
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The Commissioners' rate base determined the capital assets at \$1,518,729.30 as at 1st January, 1939, before depreciation. Exhibit 4 shows capital assets, other than land, of

\$1,529,128.43 as at 6th July, 1939, before depreciation and \$2,035,594.52 as at 30th September, 1943, before depreciation, and to all of these figures must be added value of houses and lands and rights of way. The capital assets in 1943 amount approximately to one-third more than the Commissioners' figures.

Mr. Chambers also attempted to show that if the profits were calculated year by year on the Commissioners' rate base ignoring capital additions and depreciation, Mr. Morrison in his computation was not even allowing $9\frac{1}{2}$ per cent per annum, and that Mr. Morrison's method of allowing $9\frac{1}{2}$ per cent was in fact reducing the company's rate of return progressively. If Mr. Chambers is right in this respect, the excess profits would, of course, be progressively less each year. Putting it another way, $9\frac{1}{2}$ per cent on the Commissioners' rate base for the period would be \$639,129.79, while the comparable figure by Mr. Morrison's method would be \$542,276.35, a difference of \$96,853.44. The difference and its accuracy or inaccuracy depends on whether the rate base as determined by the Company was to remain static or not; it depends on whether the starting point is to be the Commissioners' rate base or the rate base as disclosed by the Company's books from time to time and whether capital additions and depreciation are to be ignored.

Working capital was allowed by the Commissioners at the sum of \$80,000.00. Mr. Chambers' cross-examination was directed to show that this amount was quite inadequate and that the proper figures should have been:

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| 2 months' operating expenses | \$64,012.00 |
| Inventory on 31st December, 1942 | 186,024.07 |
| | <hr/> |
| | \$250,036.07 |
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From a consideration of these factors, the Company's obvious contention was that its net profit as shown in Exhibit 2, namely \$657,423.18, was not out of line with the 2.506 cents per barrel allowed by the Commissioners but in fact fell short of a proper profit because of the increased cost of operation and administration, increased income tax, depreciation and an allowance for working capital far short of the amount said to be required. This cross-examination was used as the foundation for evidence led by Mr. Chambers in support of these contentions.

Mr. Latham, C.A., employed by Royalite, produced and discussed a statement prepared by him or under his direction showing the average pipe line rate per barrel for the period, prepared along the lines followed by the Commissioners to arrive at their rate of 9.428 cents per barrel. Schedule "C" shows excess earnings of only \$13,681.73 over the period with a total return on the rate base of \$649,738.80. The explanation of the figure \$13,681.73 is, of course, a simple one. The company for some reason wiped out its excess earnings by the simple expedient of changing its method of calculating depreciation. Mr. Morrison's Exhibit 2 shows the operating results taken from the books while Mr. Latham's Exhibit 45 shows the operating results adjusted to the new depreciation method. Mr. Latham's figures in Schedule "C", Exhibit 45, do not take into account the profits made from pipe line deductions. Another way of expressing Mr. Latham's figures is that the company over the period earned only an average of 1.6819 cents per barrel for the period as against the 2.506 said to have been fixed by the Commissioners. The same Exhibit, Schedule (c), shows a computation of return on a variable rate base. For each of the years during the

period, investment in plant and equipment is shown at the constant figure in the beginning of each period of \$1,529,128.43. From this figure, there is deducted each year the constant sum of \$169,388.83 being the adjusted depreciation fixed by the Commissioners in computing the original rate base plus the actual value of salvage realized each year. To the resultant figures for each year there is added \$18,633.00 for lands and rights of way and a further amount varying from \$43,010.00 in 1939 to \$62,500.00 in 1943 for cash working capital made up of two months' operating charges based upon two years' average plus the actual inventory at the beginning of each year. A rate of $9\frac{1}{2}$ per cent per annum on this variable rate base for the whole period is \$649,748.80 and the necessary implication is that since the actual net profits amounted to \$657,423.18, the Board, if it decides that a variable rate base should be used, should adopt the rate base set forth in Schedule (c) to Exhibit 45. This schedule also shows that the average annual return was only \$144,388.60 as against \$150,383.48 being the calculated return shown in the Commissioners' computation. In effect, Mr. Latham says we are to receive a gross revenue based on $9\frac{1}{2}$ cents per barrel and out of which we are entitled to receive $9\frac{1}{2}$ per cent per annum on our invested capital, and if $9\frac{1}{2}$ cents per barrel gives us more than $9\frac{1}{2}$ per cent per annum, we keep the excess but if $9\frac{1}{2}$ cents pays operating expenses and depreciation and yields less than $9\frac{1}{2}$ per cent per annum we are entitled to have the barrel rate increased.

Schedule (c) is exceedingly ingenious and is described as an attempt to arrive at a reasonable rate base using only the capital assets as at 6th July, 1939,

and the depreciation allowed by the Commissioners. Not only does it increase working capital from \$59,510.00 for the first six months of the period to the sum of \$247,500.00 for the year 1943 (overlooking the fact that the Commissioners fixed \$80,000.00 as a proper allowance for this item), but it overlooks entirely the net additions to capital assets amounting to \$506,466.09 and the depreciation reserve amounting to \$1,083,147.74 as at 30th September, 1943. How a reasonable rate base can be constructed without taking into consideration all capital assets and all depreciation is something that the Board cannot understand. It leads to the conclusion that Mr. Latham's rate base was constructed to suit the profits made or, putting it another way, he calculated the profits first and his rate base second.

Exhibit 48 by a circuitous route arrived at the same figure for net profits, namely, \$915,646.00, reached by the simple method used by Mr. Morrison, so that there is no dispute concerning that amount.

Exhibit 51 produced by Mr. Latham purports to show the disposition of earnings arising from oil transported in excess of 6,000,000 barrels per annum. This Exhibit, Schedule E (1), shows excess earnings of \$58,337.17 on the throughput in excess of 3,000,000 barrels per annum from 6th July, 1939, to 31st December, 1939, being the same figure as is shown in Schedule "C" for the same period. Again it must be pointed out that the rate base used in this schedule is quite different from that used by the Commissioners and if this type of rate base is to be used it should contain all relevant factors. Exhibit 51 contains further statements for each year the balance of the

period and concludes with a summary showing that the excess earnings on the excess throughput each year over 6,000,000 barrels on the adjusted rate base were \$19,617.69 for the period. Quite frankly the Board is at a loss to understand the use which it is asked to make of this Exhibit. It is partly factual and partly hypothetical and its results are arrived at on an assumed rate base. It is predicated on the assumption that the company must apply its earnings whatever they may be in satisfaction of the amount said to have been allowed by the Commissioners and that when that has been done the excess throughput must be directly related to the earnings above the Commissioners' rate of $9\frac{1}{2}$ cents on 6,000,000 barrels. The Board prefers to look at the whole picture and to regard the total revenue for each year as being directly responsible for providing annual operating expenses, depreciation and return on the rate base.

A further exhibit produced by Mr. Latham (Exhibit 52) purports to show the excess or deficiency of earnings on the rate base set up by the Commissioners as adjusted at 6th July, 1939. The excess for the period plus an estimate for the last three months of 1943 is \$42,110.66. The years 1942 and 1943 show a total deficiency of \$40,690.61. This result is, of course, based upon a static 1939 rate base and is attributable to the new method of calculating depreciation and its accuracy depends on the denominator used in making the calculation. Mr. Latham frankly admitted that the only difference between his figures and those of the Board's Auditor would be the depreciation which, using his own words, "wiped out the surplus earnings that Mr. Roach would show, that is admitted, there is no question about that".

Mr. Latham produced a statement (Exhibit 54) being a calculation of estimated pipe line rates per barrel for the years 1944 to 1950. Without making any allowance for income tax or a rate of return on the rate base, the statement shows that his estimated rate for 1944 is 7.6696 cents per barrel and that the rates increase progressively until the figure of 22.4748 cents per barrel is reached in 1950. In these estimates, depreciation is calculated on the unit basis using 70,322,788 barrels as the denominator. If these rates are in fact just and reasonable to the company they may have to be allowed but the time may come when a competitive method of transportation will make those rates impossible of acceptance by the shippers. The realities must, of course, be taken into consideration at the end of each year, that being the point of time when it will be known with certainty whether the rate fixed is just and reasonable or otherwise.

Mr. Latham was not cross-examined for some days after he gave his evidence in chief and in the interval Mr. Thos. Humphries, C.A., gave evidence on behalf of the Company. He is the resident partner in Calgary of Price, Waterhouse and Company, who are the Company's Auditors, and he was consulted by and acted throughout with Mr. Latham in the preparation of the Exhibits filed by the latter. He stated that, notwithstanding the evidence given before the Commissioners and their findings, the company officials were of the opinion that the life of the Turner Valley field would only be twelve years and they proceeded to adjust depreciation on that basis. In fact, they appeared to dismiss the findings of the late Mr. Justice McGillivray and Mr. Lipsett as something quite wrong and not to be taken into account. When challenged

as to this view taken by company officials, Mr. Humphries pointed out that the change had been made "for the purpose of financial statements to be presented to the shareholders". For its own purposes and for submission to its shareholders, the company can set up its books on any basis it pleases but the fact remains that the same books and the same entries therein were used by Mr. Latham at the hearing to paint a dismal picture to the Board - a past where the company had just made ends meet and earned its $9\frac{1}{2}$ per cent per annum, - a future which would require annual progressive increases in the rate per barrel to avoid ultimate bankruptcy. Mr. Humphries proceeded to state that in May 1943, the company estimated the oil reserves in Turner Valley at 70,322,788 barrels - an estimate of 37,677,212 barrels less than the 108,000,000 barrels estimated by the Commissioners - and decided that the method of calculating depreciation should again be changed. Curiously enough, this estimate of 70,322,788 barrels when used as the denominator for calculating depreciation on the unit method enabled the company to wipe out all excess profits earned up to September 1943 - perhaps fortuitous but certainly very convenient. It is approximately 13,000,000 barrels less than the estimate presented by the company at the hearing.

Mr. Humphries expressed the opinion that the unit method of computing depreciation is preferable to the straight line method for the reason that under the former method every barrel of oil going through the pipe line bears its fair share of depreciation and distributes the burden of depreciation rateably over the useful life of the line. Unit depreciation is ascertained by multiplying

the annual throughput of the line by the undepreciated capital assets and dividing the result by the estimated barrels of recoverable oil in the field. The numerator figures are accurately ascertainable but the denominator must necessarily be estimated so that the accuracy of the quotient or depreciation factor must depend upon the relationship between the estimated denominator and the reality.

In dealing with the amount of \$43,165.69 charged to the surplus oil account, Mr. Humphries stated that three alternative treatments of this item were available:

- (1) the amount could be treated as inventory;
- (2) could be written off as an extraordinary expense;
- (3) could be charged against the credit which was available out of sales of surplus oil.

The latter method was in fact adopted by the company and this subject will be discussed later.

Mr. Humphries did not agree with Mr. Latham's method of computing the variable rate base previously discussed.

He pointed out that a stable rate base had been used in Exhibit 52 on the advice of counsel and he was of the opinion that the company was entitled to earn $9\frac{1}{2}$ per cent on the rate base fixed by the Commissioners until such time as that rate base had been changed by the Board. He felt that the adoption of this principle was fair to the shareholders and he looked at the problem from their point of view. He agreed that, beginning with 1944 it would be proper to adjust the rate base annually if the company had power to distribute excess depreciation reserves to its shareholders and if the excess was represented by cash. He pointed out that the dividends paid

amounted approximately to the net profits earned and that consequently all of the original capital was still in the business. This static rate base, however, does not take capital additions or depreciation into account and Exhibit 52 assumes that the company is entitled to a return of $9\frac{1}{2}$ per cent per annum on the sum of \$1,457,372.60 until such time as the rate base is reviewed and re-established by the Board. Mr. Humphries pointed out that taking the operations of the company year by year, it, because of its cash position, could not repay capital out of depreciation reserve. That situation was in part due to the payment of dividends - properly paid pursuant to The Companies Act - which, when considered from the point of view of regulation, were partly payments on account of capital. Indeed any dividend paid by a company whose future is related to a wasting asset is so regarded and the Income Tax authorities give effect to this view by a depletion allowance - arbitrarily it is true but the principle is recognized. The Company's cash position was affected by reason of the heavy investment of its depreciation reserve in inventory.

Mr. Latham when recalled was examined in chief by Mr. Chambers on matters which arose out of the evidence given by the engineering and geological witnesses. Exhibit 70 is a statement of drilling costs in the central area of the field. The statement shows that the total cost of drilling an oil well and putting it on production, plus the costs of operation for seven years would amount to \$338,575.00. At the average price per barrel in October, 1943, a well would require to produce 202,739 barrels to meet these costs. Mr. Krämpert estimated that wells in the central area would only provide on an average 189,511

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barrels and the inference is that such wells would not be drilled. No allowance was made in this calculation for salvage or income tax. If one of these average wells was connected with a tank battery the costs of operation would decrease and a profit could result. It is assumed that this Exhibit was produced to establish that the economics involved would prevent wells being drilled in the central area. The Board's experience is that economics do not deter speculators from drilling wells and refinery companies who make profits out of the refined oil are not deterred from drilling merely because the well by itself cannot be drilled and operated at a profit.

Mr. Latham explained, on cross-examination, that if it is to be said that the company made excess profits then these excess profits should be calculated on a rate base that would allow a rate of return on what the company considered to be working capital rather than on the amount fixed by the Commissioners. If that contention is sound, then regulation becomes a farce and a waste of time. Regulation on that basis must result in rates to be fixed by the company, the Board becomes a mere rubber stamp for the company and the utility customers must accept the result.

Mr. Latham advanced the theory that the rate of return was made up of two factors:- (a) 6 per cent on the capital investment; and (b) $3\frac{1}{8}$ per cent as a reward for the service rendered; that the 6 per cent return would be allowed on a static rate base until altered at a hearing but that the $3\frac{1}{8}$ per cent which is equivalent to one cent per barrel on a 6,000,000 barrel throughput would be a standard rate converted into one cent per barrel so long as the company continued in business. The Board is unable

so to interpret the Commissioners' computation of the service rate. The Board, however, agrees that when the original investment is returned through the service rate or if the original investment is so reduced that the rate of return does not yield a fair reward for the service rendered, consideration should then be given to a service rate based upon factors other than a return on capital investment.

Mr. Latham developed the extraordinary theory that the company had no power to make capital additions if by so doing the Commissioners' rate base should be increased, his reason being that the company was only entitled to a rate of return on the original rate base and that in order to protect itself the company would require to refuse to make capital additions if the original rate base was thereby increased. Whether this opinion is due to a misunderstanding of a rate base generally and of the obligations on a public utility company to give service, the Board is unable to say. It would appear that Mr. Latham, in calculating what a reasonable rate base should be, was quite determined to have that rate base maintained at a figure approximately the same as that arrived at by the Commissioners and to that extent it must be held that he subscribed to the theory of a rate base, more or less static as to amount but variable as to its structure, and that if necessary to support his view, capital additions and depreciation should be disregarded.

It seems to the Board that the simple and proper way to arrive at profit or loss is to deduct the operating expense including depreciation from the gross revenue. To arrive at excess profits the rate of return allowed to the

the company should be deducted from the result thus obtained. If, by a change in method of computing depreciation excess profits are in effect transferred to depreciation reserve, then the Board is concerned with the method of setting up that reserve and the quantum thereof. In the Board's opinion, the company did make excess profits and by converting these profits into an addition to its depreciation reserve, it is possible that it now has an inflated depreciation reserve. This subject will be considered later.

Life of the Field

The amount of recoverable oil in the field is an important element in arriving at the rate to be allowed for pipe line transportation. The Commissioners were confronted with that problem and dealt with it. At the hearing in 1939, one witness estimated that with an annual throughput of $5\frac{1}{2}$ million barrels, the field had a life of thirty-one years or, in other words, a recoverable content of 170,500,000 barrels. Another witness indicated that the life of the field might not be more than two or three years. The evidence at that inquiry was not available to this Board and it is assumed that this witness in arriving at his conclusion must have been dealing with the wells then drilled and with an area restricted to the vicinity of these wells. That assumption appears to be well founded in view of the Commissioners' comments and the quotations from the evidence discussed in their final report. Another estimate was 105,000,000 barrels or a field life of twenty-one years based on an annual throughput of 5,000,000 barrels. Another witness estimated a total original reserve of 215,000,000 barrels with a future recoverable reserve of 200,000,000

barrels. Still another estimate was 122,388,027 barrels.

Various engineering methods were used by the different witnesses in arriving at their respective conclusions and some of them at least were critical of the engineering methods used by others. All of them appeared to use different acreage factors and classified the acreage dealt with by them into "proven", "probable" and "possible" zones. One of these witnesses was Dr. Boatright, a Petroleum Engineer from Houston, Texas, whose estimate was that there were 170,000,000 barrels of recoverable oil in the field but he stated that this estimate might be subject to an error of thirty per cent. The Commissioners accepted his conclusions in the main and on the assumption that the annual throughput would be 6,000,000 barrels, held that the life of the field was eighteen years. That in effect is a finding that the recoverable content of oil was 108,000,000 barrels as at 1st January, 1939. The Commissioners reached their conclusion after a long hearing, and after receiving, considering, and analyzing the evidence given by professional skilled witnesses who were either geologists or petroleum engineers, all of them enjoying high professional status.

In the present inquiry, the Board is invited by the Company to declare that the findings made by the Commissioners were erroneous and to hold that the recoverable content of the field, as at 1st January, 1939, was much less than 108,000,000 barrels and for that reason, together with the substantial increase in the annual throughput caused by the war, should declare that the remaining life of the field is quite short. To accept this invitation involves an onerous responsibility which the Board should not assume, unless the evidence adduced leads to the irresistible conclusion that, by reason of new information

new and improved methods of determining recoverable reserves, or by the elimination of those intangibles used by the witnesses before the Commissioners, their findings should be rejected and a fresh estimate arrived at. The Board is of the opinion that the burden of establishing such an error on the part of the Commissioners should rest upon those who so allege.

Three types of petroleum are produced in the field, namely, crude oil, naphtha and natural gasoline, the latter of which is extracted from natural gas by an absorption process. All three types are transported by pipe line.

Mr. H. Stevens-Guille, who gave evidence for the company, is a graduate of Birmingham University, a chemical engineer by profession and an employee of Royalite. He produced a statement of his estimate of the natural gasoline which would be transported by the company through its pipe line system during the years 1944 to 1950. Natural gasoline is extracted from natural gas which comes from two areas, the first of which produces gas with a gasoline content only (known as the gas cap area) and the second of which produces crude oil in addition to natural gas with a gasoline content. The figures given by Mr. Stevens-Guille are as follows:

| | | | |
|---------|-----------------|---------|-----------------|
| In 1944 | 450,180 barrels | In 1948 | 193,246 barrels |
| In 1945 | 427,050 " | In 1949 | 181,770 " |
| In 1946 | 273,750 " | In 1950 | 177,755 " |
| In 1947 | 216,080 " | | |

In arriving at these figures, certain assumptions were made by the witness and the accuracy of the final result must necessarily depend upon the accuracy of the assumptions.

Five assumptions in fact are made, namely, that the war will end in 1945; that gasoline will be produced to present specification for one year thereafter; that iso-butane requirements will then decrease; that the yield of natural gasoline from the natural gas produced will decrease from 0.65 of a gallon to 0.50 of a gallon per 1000 cubic feet during the period 1944 to 1950, and that the gas volume will decline ten per cent each year from the previous year's figure. The estimate only takes in the period from 1943 to 1950 and so cannot represent a complete estimate of the ultimate possible recovery. The market demand for fuel natural gas is high at the moment because of the needs of military barracks, airports, prisoner of war camps, and an ammonia plant on the outskirts of Calgary. When the war ends he estimates that there will be a gradual drop in market demand and consequently a drop in the amount of gas available to absorption plants for processing. The total of the foregoing estimate is 1,919,833 barrels.

Gross-examination disclosed that of a total of 260 gas cap and crude oil wells in the field, possibly only 160 were connected to absorption plants.

If the recoverable gasoline remains at 0.65 gallons instead of going down to 0.50, the difference in production over the period mentioned might be as much as 200,000 barrels. That amount when related to the total gasoline and crude oil recovery in the field is quite small but it demonstrates the possibility of error if one of the assumptions made by the witness should prove to be wrong. The witness agreed that uses have been found for iso-butane other than making high octane aviation fuel, such as in the manufacture of synthetics and bottled gas, and that in future it is possible that there will be a higher octane

rating for motor car fuel. It was demonstrated that the average ten per cent decline in the annual gas production used by this witness was related to the wells from which the gas was taken, whereas the total gas produced from all wells in the field in the past few years has remained fairly constant. Even if all of Mr. Stevens-Guille's assumptions should prove to be wrong, the percentage of error in his final figures would have little effect on the estimate of oil available for pipe line transportation.

Mr. Vernon Taylor, a petroleum engineer and an employee of the Royalite since 1937, gave evidence for the company. He has been engaged principally in supervising oil production from wells operated by Royalite in Turner Valley. His estimate of the total production to be expected from the field during the years from 1943 to 1950 is 39,832,875 barrels. Even if that figure be correct, it does not answer the question which must be the subject of this inquiry, namely, "What is the recoverable content of the field?" He arrived at his estimate by what is known as the decline curve method which consists of plotting on squared paper the performance of a well or group of wells over a given period. The resultant graph is obtained by drawing a line through the plotted points and if production remains level, the graph will be a fairly straight line but if the production is going up or is going down the resultant graph will be in the form of a curve.

If, however, semi logarithmic paper is used for plotting the points, the resultant graph is a relatively straight line although the line will be at an angle with reference to the lines representing production and time. The line formed by the graph is then projected and if the plotting is scientifically and mathematically correct, the

extrapolation of the line will indicate the approximate life of the well or the group of wells included in the graph.

In arriving at his estimate, Mr. Taylor actually used two different methods. He grouped the wells into two classes: (1) old wells - all wells completed prior to May 1943, and (2) new wells - all wells to be completed after that date. First he used the decline curve method for calculating the production from 69 Royalite operated wells and extrapolated the curve thereby obtained to the year 1950. Between 1st January, 1943, and 1st April, 1943, Royalite wells averaged 36.5 per cent of the total production of the field and on the assumption that this percentage would remain approximately constant, he used this 36.5 per cent factor to deduce that the total production to be expected from wells drilled up to the end of 1942 for the period 1943 to 1950 would be 23,926,721 barrels. The second method was to plot on semi logarithmic paper the total daily production from 202 wells drilled before 1943. These wells were divided into six groups, namely, 26 completed prior to 1938, 36 completed in 1938, 33 in 1939, 36 in 1940, 42 in 1941 and 29 in 1942. The resultant curves (Exhibit 11) were extrapolated to the production point of 10 barrels per day and an estimate of 23,863,290 barrels was obtained. The use of the two methods no doubt was for the purpose of checking the one against the other. The difference in estimated production obtained by the two methods was 63,429 barrels or 1/4 of one per cent.

He estimated that there were 135 possible drilling sites left in the field, of which, in his opinion, only 75 would be drilled, 25 of these being in the central or low

production area and the balance throughout the rest of the field. He assumed that 16 wells would be completed in the latter part of 1943, 39 in 1944 and 20 in 1945, and that each well would have a varying initial daily allowable production depending on the part of the field in which each was drilled. The yearly rate of production for future wells was estimated on the same decline basis as that used for old wells, resulting in a total estimated production of 15,906,154 barrels for the period from 1943 to 1950 from new wells, making a total future recovery from all old and new wells of 39,832,875 barrels. Mr. Taylor finally concludes that the recoverable oil from the field from 1939 up to 1950 is 82,646,088, representing a yield of less than 5000 barrels per acre from the presently defined limits of the field. Mr. Taylor added that if ten wells were drilled in excess of his estimate, they would be drilled in the central low producing area and that his estimate of total production would be increased by 1,750,000 barrels. The field production for 1951 is estimated at 1,000,000 barrels so that on the basis of his estimates and assumptions the total ultimate recovery from the field should be approximately 85 to 90 million barrels. If the defined area of the field is 17,500 acres, the average yield would be less than 5,000 barrels per acre.

On cross-examination, Mr. Taylor stated that the oil horizon extended to 17,000 acres and if his estimate that only a total of 288 wells would be drilled is correct, allowing 40-acre spacing per well, then 11,520 acres would have been utilized up to 1950, leaving one-third of the field undeveloped.

It was agreed that the decline curves (Exhibit 9) for the 1942 group of wells took in only a part of the

year 1943, that the pre-1938 well curve starts in 1939, but that in making the computation for the Royalite wells, the graph started at the time the various wells in that group came into production. Mr. Taylor hesitated to answer the question whether the field, now being produced under the Brown plan inaugurated in 1942, had ever been produced under better conditions than at the present time. He did say that he was satisfied with the Brown plan and that it was a good plan. In spite of his hesitancy and his indirect answers there was no doubt in the Board's mind that he was in complete agreement with the principle implicit in the question. It would seem to the Board that any plan of uniform conservation for the production of oil must necessarily avoid the violent fluctuations in production which the graphs indicate must have taken place prior to 1942.

It was further demonstrated in cross-examination that the extrapolation or projection of any decline curve must depend entirely upon the interpretation put upon the curve by the estimator and it is quite obvious, even to a layman and apart from anything that any witness may say, that if the extrapolation of curves on Exhibit 9 were projected, taking the inauguration of the Brown plan as a start, the productive life of the wells selected would be extended from one to two years. The extrapolation of the curves of the 1940, 1941 and 1942 groups show an economic life of these groups of wells up to the year 1953. The witness admitted that decline curves may be theoretically correct but that mathematically they are not, and yield no better result than an approximation with a possible percentage of error of ten per cent. Another admission made

by the witness was that any estimate of ultimate recovery based upon decline curves can only refer to the areas actually drained by the wells in each group shown on the curve and that in case any well is not effectively draining its area there is little relationship between the production from that well and the available oil in the whole structure. He also agreed that an estimate based on decline curves may or may not represent the total reserves that can be recovered from the field as a whole. The curves in Exhibit 9 make no allowance for gravity drainage, which, if it occurs would increase the recoverable oil in those areas in which such drainage takes place after the expulsive energy of the natural gas is gone.

Mr. Taylor further stated that the production from 26 pre-1938 wells to September 1943 was 9,977,530 barrels, an average of 384,600 barrels per well and representing a recovery of 9,600 barrels per acre. For the year 1938 the comparable figure was 7,250 barrels per acre; for the 35 wells in the 1939 group, 6,700 barrels per acre, an average over the whole number of wells of 7,750 barrels per acre. It was shown that of the group of wells in the pre-1938 group, one was drilled in 1930, one in 1933, three in 1936 and twenty-three in 1937. Thus the life of twenty-five per cent of the wells included in this group was quite long and yet they were grouped with wells drilled in 1937. In completing the graph, no allowance was made for this factor. Obviously it would have been sounder practice to have placed the 1937 wells in a group by themselves and to have drawn a graph of the five pre-1937 wells. The extrapolation of the curve of the 1937 group would of necessity have been projected beyond the year 1948 with a resultant difference in the ultimate total recovery. If the

extrapolation of the pre-1938 group is related to August or September, 1942, the projection would reach the year 1951 instead of 1948. If the latter method is sound, the difference in the life of this group is about four years in which case, the ultimate estimated production from these wells would be materially increased. If the same method were used in the extrapolation of the decline curves of the other five groups of wells, the difference in estimated production would be quite substantial.

Apart altogether from estimates based on decline curves which must be considered as approximations only, the other method used by Mr. Taylor is also based upon certain assumptions. He took the actual performance of 39 wells and applied the results obtained to all other wells in the field. It is well known to the Board and it was established in evidence that Turner Valley is badly broken and faulted, that there is no uniformity of porosity or permeability in the oil bearing limestone and that some poor wells are surrounded by good wells and that a non-productive well can be drilled on a site adjoining a good well and vice versa. Mr. Taylor admitted that 135 is not the maximum number of wells which may yet be drilled and that because future drilling depends upon so many intangibles, it may even be double that number. If that happened the estimated recovery might be increased by 12,700,000 barrels up to 1950 and to that there must be added the estimated production after 1950 and to that again must be added the recovery of natural gasoline and naphtha.

In the ultimate result it was demonstrated, using Mr. Taylor's figures and adding to them the oil which might be secured from additional wells drilled and by adding natural gasoline recovered from natural gas heretofore

produced, that a recoverable oil reserve as at 1st January, 1939. of 108,400,000 was possible without any allowance being made for percentage of error or for oil produced after 1950. It is true that Mr. Taylor did not agree with all the assumed factors leading to this conclusion but it seems to the Board that the assumptions made by Dr. Boatright and put by him to the witness in cross-examination were as fully warranted as the assumptions made by Mr. Taylor himself in arriving at his estimates.

E. W. Krampert gave evidence on behalf of the Company. Mr. Krampert holds the degree of B.Sc. from the Carnegie Technical Institute; is a consulting geologist practising his profession in Caspar, Wyoming, and has been employed as a geologist by various companies for a considerable period of time. He visited the Turner Valley Field on numerous occasions in the past and has been familiar in a general way with its development. He has specialized in geological work in the Rocky Mountain oil region in the United States and in Canada. Since 1932, with the exception of one year, he has been a consultant only and in that capacity has made estimates of the recoverable oil reserves in several fields in the Western States.

Mr. Krampert for the purposes of this hearing made an estimate of the possible future recoverable reserves of oil in the Turner Valley field. His figure, as shown by Exhibit 28, is 35,133,600 barrels which amount, added to the oil recovered since 1930 makes an original recoverable reserve of 86,736,531 barrels. This is equivalent to 5421 barrels per acre on the assumption that the field extends to 16,000 acres. It will be noted that this is 1500 acres less

than Mr. Taylor's estimate. This estimate does not include naphtha or natural gasoline. The figures as at 1st January, 1939, for crude oil, naphtha and natural gasoline are 83,927,318 barrels:

| | | |
|--|------------------|--------------------------|
| Crude oil produced up to
31st December, 1943 | 51,602,871 | |
| Less production to
December 1938 | <u>8,329,943</u> | 43,272,928 |
| Future estimated crude production | | <u>35,133,660</u> |
| | | 78,406,588 |
| Naphtha production from
December 31st, 1938, to 1943 | 401,134 | |
| Estimated future production | <u>880,000</u> | 1,281,134 |
| Natural gasoline production
December 31st, 1938, to
September 1943 | 1,498,136 | |
| Estimated future to end
of 1954 | <u>2,741,460</u> | 4,239,596 |
| Total recoverable reserves
as at 1st January, 1939 | | <u><u>83,927,318</u></u> |

Mr. Krampert adopted Dr. Boatright's estimate of future naphtha production and Mr. Stevens-Guille's estimate of future natural gasoline production.

In arriving at his estimate, Mr. Krampert used production decline curves. He pointed out the advantages and disadvantages of this method and in particular pointed out that the personal factor is an important one when engineers using this method have opposing objectives. He instanced how different engineers could draw different curves depending upon the purposes for which the ultimate result was required and that no two engineers using this method and using the same data would arrive at the same result. In other words, the extrapolation of the curve

would depend entirely upon the personal judgment of the engineer drawing the curve, which judgment could be affected by the purpose sought to be served.

He grouped the wells as did Mr. Taylor but he took the 1937 wells as one group, the 1936 wells as one group and the pre-1936 wells as one group. He also prepared graphs for the groups of wells which he estimated would be drilled in each of the years 1944, 1945 and 1946, numbering 70 in all. By the use of these graphs and the extrapolation of them, Mr. Krampert reached his estimate of future production of 35,133,660 barrels and his ultimate total of 86,736,531 commencing with the year in which oil was first produced. He was of the opinion that only from 65 to 70 wells would be drilled after 1943 although there are 135 possible drilling sites remaining in the field and his future estimated production must naturally be affected by the number of wells actually drilled. He agreed that throughout the field there are good spots and poor spots occurring without any known or apparent reason for that condition; he agreed that the field could be divided into three areas and that the central area was the least productive of the three. In the appendix to Exhibit 28 all of the wells dealt with, excepting two, were taken from the central or poorest area of the field. He did not prepare similar figures for the north and south areas where production is admittedly much greater than in the central portion.

On Page 13 of Exhibit 28, Mr. Krampert shows decline curves and the extrapolation of them for each group of wells drilled in each of the years from 1937 to 1941. It is obvious that there is a marked difference in

the slope of the curves between June 1941 and January 1943 when compared with the balance of them. The difference is strongly marked for the 1937 group, is quite apparent for the 1938 group and is not quite so noticeable in the 1939 and 1940 groups, but is still there and exists only to a very slight extent in the 1941 group. Mr. Krampert agrees that it can be deduced that these wells were not being efficiently produced prior to the inauguration of the Brown plan. In the case of all groups, the annual production is taken up to the year 1942 and for the year 1943 the average monthly production is used. He agreed that for the purpose of extrapolation it is very unsafe to use the early years of a well's life. He was referred to the estimate made by Mr. Gill in his evidence before the Commissioners of the production to be expected from Turner Valley Royalties No. 1 well, made at a time when that well had been on production for approximately two and one-half years and admitted that the results obtained, using the decline curve method, when compared with his own results, indicated a possible error in excess of five per cent. He, however, modified this admission by stating that after a life of five or six years the possibility of error in estimating reserves by this method would not exceed two and one-half per cent. Perhaps a more accurate picture would have been obtained had a graph of every well been prepared but this was not done by Mr. Krampert because of the enormous amount of work which would have been involved. Mr. Krampert's estimate, however, is limited to the production which can be expected from the wells included in the completed graphs plus the production from the 70 additional wells which he estimates will be drilled. These figures, however, in the

Board's opinion, do not give the total recoverable reserves in the field and in any case his estimate does not go beyond the year 1950, except in the case of naphtha and natural gasoline.

He agrees that an increase in the price of crude oil would immediately affect the number of future wells. He further agrees that permeability, temperature, viscosity of oil, well spacing and well depth all might have their effect upon recoverable reserves.

Page 87 of Exhibit 28 is a plot on semi logarithmic paper of Royalite No. 61 well and shows the extrapolation of the curve. If the extrapolation had been drawn through the period points for December 1942 to the same point to which it was projected by Mr. Krampert, the difference in estimated production would be 30,600 barrels, a variation of $18\frac{1}{2}$ per cent as between the two extrapolations of the curve.

Mr. Krampert was later re-examined by Mr. Chambers regarding this graph and was asked if he thought Dr. Boatright's alternative suggestion was a proper one. Instead of a direct answer he suggested the drawing of a third extrapolation with the line going through all the plotted points except the last four. His original curve would fall between Dr. Boatright's suggested curve and the curve last mentioned. He added that his curve would be a fair interpretation - a conservative estimate; that Dr. Boatright's curve "is all right" but rather a high one. He stated that a lot depends on what you are making the curve for. To use his own words "If you want to know how much you can expect to get then you take the high interpretation, if you are making an estimate for paying taxes where you have to stay

low you take the lower. If you want to know the facts go down the middle." The Board assumes, however, that if two different engineers made estimates for the purposes mentioned, one using the higher and the other the lower interpretation, each would present his views to the adjudicating tribunal as representing "the facts", well knowing that the facts would lie somewhere between the two. Perhaps, however, it would be fairer to say that no matter for what purpose the estimate is made, the interpretation of the curve is subject to some percentage of error. While this discussion was going on, the Board drew the suggested high and the suggested low extrapolation on a copy of Page 87 and it is quite obvious that the percentage variation between the three curves is quite substantial. When Mr. Krampert stated that he might draw a curve one day and perhaps would not get the same result had he waited until the next day, he summed up the impossibility of accurate results being obtained.

Page 84 of Exhibit 28 is a curve of Royalite-Lowery No. 1 well, the extrapolation of which would indicate an economic life until early in 1947. Mr. Krampert admitted that this result was a mere guess because sufficient information was not available to enable a proper graph to be drawn.

Page 72 of Exhibit 28 is a curve of Royalite No. 47 and shows the extrapolation of the curve. If the line is extended, the production for all of 1942 and most of the production for 1943 lies below the line. The 1941 group of wells has too short a life to ensure accurate extrapolation of the curve. It is perhaps unnecessary to go into further detail except to say that further cross-examination demonstrated to the Board's satisfaction that the possibility of

error in estimating reserves by this method is far greater than the two and one-half per cent insisted upon by Mr. Krampert. It also established that production decline curves give the amount of oil which will be produced in a particular area of the field regardless of what that area is and which may not be the equivalent of the total area of the field.

Dr. B. B. Boatright was called by Mr. Frawley. He is a consulting and Natural Gas Engineer, a graduate in Mining Engineering of Colorado School of Mines. He received the degree of Ph.D. from the University of Colorado, majoring in petroleum and geology. He has had wide experience in many oil fields and for seven or eight years was head of the Department of Petroleum Engineering and Professor of Petroleum Production at Colorado School of Mines, and taught pipe line production, pipe line design and economics as related thereto. At the present time he is engaged in private consulting practice. Dr. Boatright was a witness before the Commissioners in 1938-1939.

At the present hearing he defined the Turner Valley production area as being 17,000 acres against 16,000 acres defined by Mr. Krampert and 17,500 acres defined by Mr. Taylor. He was generally in agreement with these gentlemen on the geology of the field. Exhibit 68 produced by the witness is a statistical summary by years of the drilling of completed wells and the oil and gas production from this field. An analysis of this Exhibit discloses the following:

| | |
|---------------------------------|-----------|
| Naphtha production to 1938 | 8,352,208 |
| Crude production to 1938 | 8,337,573 |
| Natural gasoline to 1938 | 2,940,338 |
| Shallow well production to 1938 | 453,994 |

20,083,913

Total to 1st October, 1943:

| | |
|------------------|------------|
| Shallow wells | 485,171 |
| Naphtha | 8,714,674 |
| Crude | 49,457,350 |
| Natural gasoline | 4,438,454 |

63,095,629

Pre-1939

20,083,913

1939 to October 1943

43,011,716

The witness stated that no matter what method might be used for estimating oil reserves, the accuracy of each method improves with the age of the wells and the age of the field. His opinion is that, in general, errors will arise because of the personal interpretation placed upon the various factors by the estimator and can also arise because of the lack or inaccuracy of the critical data used in arriving at the interpretation. In giving evidence before the Commissioners, Dr. Boatright used the volumetric or porosity method, a method which he stated is subject to a number of inherent errors, which need not be dealt with here. However, it is a method commonly used to estimate reserves in a newly discovered field. He pointed out certain sources of error which may arise using the production decline curve method. Even if the curve can be projected with an accuracy of ninety per cent or greater, since the curve merely indicates the amount of oil which may be expected from a well or group of wells, the error may be much greater than ten per cent when estimating total recoverable reserves. The drainage area of the wells may be important and since the decline curve merely shows the expected recovery from a particular well or group of wells, the possibility of error, in his opinion, may be between thirty and forty per

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cent. The methods of proration used before the inauguration of the Brown Plan in Turner Valley were described by him as having little rhyme or reason and examples were quoted to illustrate the point. Some of these methods tended to introduce increasingly efficient production methods but he maintained that the Brown Plan was the first attempt to regulate production with relation to the field's ability to produce oil and that the effects of the various methods used were reflected in the exhibits produced. He pointed out that estimates given in evidence before the Commissioners by witnesses who used decline curves varied from a high of 25,000 barrels per acre to a low of 4,000 barrels per acre. He pointed out that until the Brown Plan was instituted the proration of the field under different systems was extremely erratic. In his opinion, the Brown Plan was the first attempt to regulate the field upon the field's ability to produce oil, the results of which are shown on the decline curves produced. His opinion was that the extrapolation of the curves for the 1937 and 1938 groups would be accurate to within ninety per cent but that the degree of accuracy would decrease progressively for each of the groups in the succeeding years. If there is an error of twenty per cent in Mr. Krampert's figures, the result would be a total recoverable reserve of approximately 103,000,000 barrels without any allowance being made for natural gasoline or naphtha.

Mr. Chambers' able cross-examination of Dr. Boatright on these points did not materially affect the opinions expressed by the witness or cause him to modify his criticism of the decline method of estimating reserves - a criticism, however, which only went to the question of accuracy and not to the propriety of the method itself. It

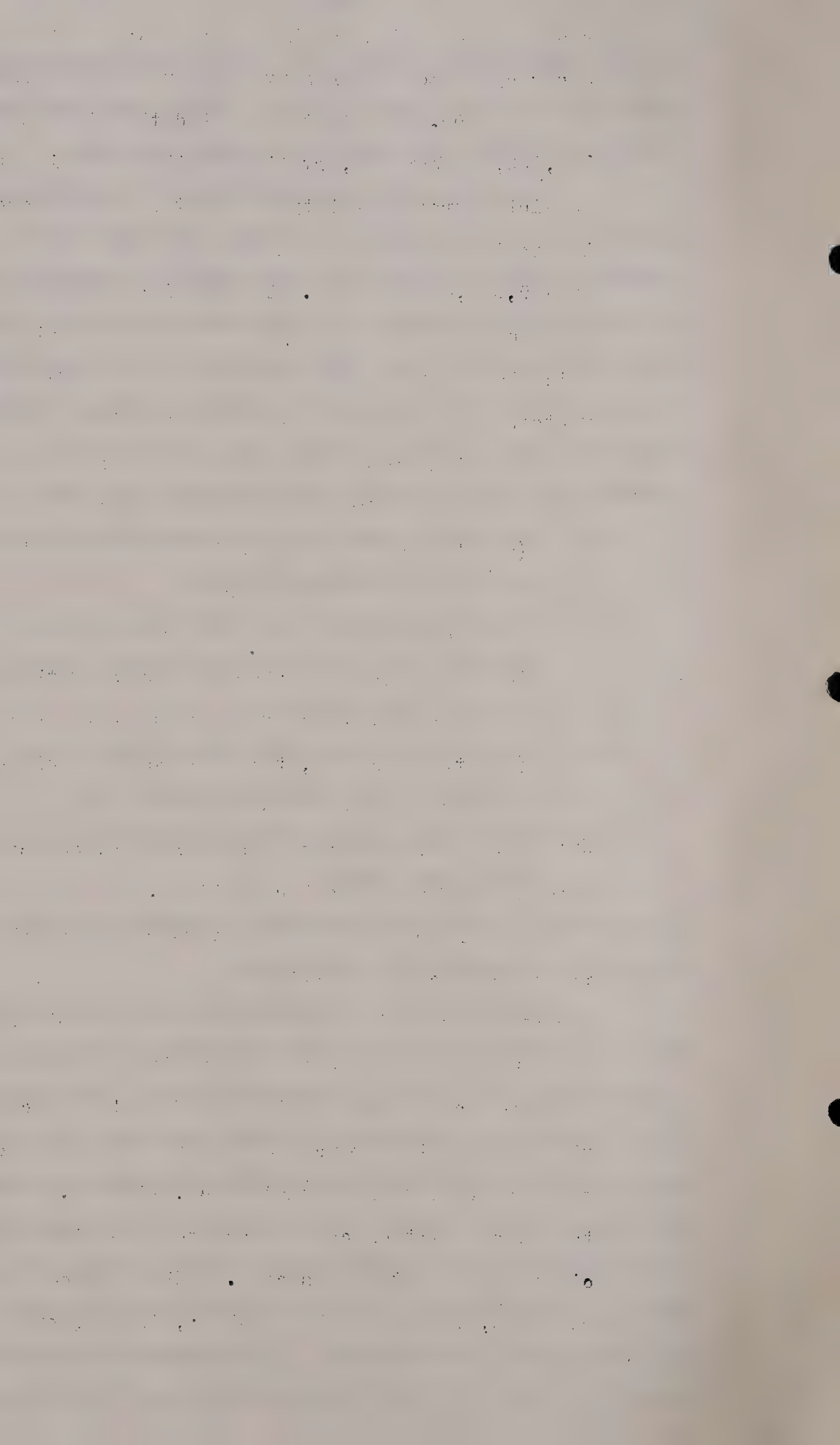
was his opinion that there is no method of determining reserves in a field such as Turner Valley that has an accuracy of more than sixty or seventy per cent.

Dr. Boatright estimated the oil reserves at 170,000,000 barrels, stating at the same time that a possible error of thirty per cent should be conceded which if applied would result in an estimated recoverable reserve of 119,000,000 barrels. This estimate was arrived at by the use of what is known as the material balance method which has been developed during the past few years. Four factors must be ascertained or determined and these are:

- (a) the pressure and temperatures in the sub-surface reservoir at different times;
- (b) the relationship between the amount of gas in solution in the reservoir oil under various temperatures and pressures;
- (c) the shrinkage characteristic of the oil as the gas comes out of solution in the oil;
- (d) the pressure, temperatures and volume relationship for the gas phase.

This method of computing reserves is almost completely independent of geological conditions.

As oil and gas are withdrawn from the oil wells, the space vacated is filled with gas and oil resulting in a continuous series of gas expansion and oil shrinkage. If then the original gas content of the reservoir oil is known and how much gas is required to fill the space vacated by the gas and oil produced and by the gas which comes out of the reservoir to fill that space, then Dr. Boatright asserts that a calculation can be made to determine the amount of oil from which that gas came. This method of computing oil reserves, like all other methods, is subject to error. For



instance, the final determination of the physical properties of the oil is no more accurate than the sample from which it was obtained and the whole result may be affected by errors in the laboratory procedure used. Dr. Boatright made no analysis of the reservoir fluid in Turner Valley and he used data secured from the Rodessa and Oklahoma City oil fields where the gas corresponds very closely to the gas in Turner Valley and where the oil has similar characteristics to that found in Turner Valley. The inadequate development of the central portion of the field and the possibility of differentiation in the oil characteristics in the different parts of the field made it necessary for Dr. Boatright to base his estimate from wells drilled between the 3000 and 3500 foot contour lines.

He admitted that in general the application of material balance calculations is limited chiefly by lack of field data and that the greater the number of dependable pressure surveys, so is the accuracy of the result, from which it naturally follows that the fewer the number of dependable pressure surveys the less accurate will be the result. Dr. Boatright made no laboratory tests but used information obtained from outside sources which included laboratory tests made by Dr. E. H. Boomer of the University of Alberta. Dr. Boatright asserted that the material balance method was a recognized and proper method of calculating reserves and the only criticism directed by Mr. Chambers to it related to the accuracy of the factors used by the witness in arriving at his results. As already stated, he admitted freely that the possibility of error was as much as thirty per cent and that a substantial percentage of error must be applied no matter what method is used.

His final conclusion, after making generous allowances for percentage of error was that as at 1st January 1939, the recoverable reserves of crude oil, naphtha and natural gasoline in the field were 119,000,000 barrels, of which amount, 111,300,000 barrels would be available for pipe line transportation.

Mr. Krampert was recalled to reiterate that his estimates were accurate and to say that if fewer wells were drilled than his estimate contemplated, the result would be still lower. He stated that he had never heard of the material balance method being used for the purpose of estimating reserves for pipe line purposes; that it does not afford an accurate method of estimating the recoverable oil in any field and that for the purposes of this hearing, the material balance method was worthless. That, of course, was a very startling statement. Both Dr. Boatright and Mr. Krampert are men with a very high standing in the petroleum engineering field; both have had wide experience in estimating recoverable oil reserves and both are men who have reputations which they cannot afford to lose. Mr. Krampert almost dogmatically asserts that his method is so perfect that the only error he will admit is a possible two and one-half per cent and he dogmatically condemns as useless the method used by Dr. Boatright. From the subsequent cross-examination of Mr. Krampert, the Board is not convinced that he was in a position to evaluate the material balance method in its application to this problem nor is the Board prepared to reject as worthless the use of that method by Dr. Boatright. It was a method used by an engineer of obvious ability and experience, and it is difficult to believe that he would solemnly present worthless evidence to the Board on such an

important matter. Mr. Krampert stated that his knowledge of the material balance method was mostly academic but that he had used it academically in the Salt Creek field in 1937 or 1939 for the purpose of ascertaining how close he could get to other recoverable reserve estimates which were nearly accurate. The Board is not quite clear if this academic experiment was to test the efficacy of the material balance method or not but it would seem to be unnecessary to use a worthless method to check results arrived at by some other method and which were nearly accurate. To make such a trial is still less understandable when the critical data required for its use was not accurate; when there were at that time no laboratory tests available; when he knew little about super-critical temperatures and pressures and when all his figures were obtained from outside sources of information. Unfortunately he did not give the result of his academic application of the material balance method to the nearly accurate estimates which were then in his possession.

During the further cross-examination of Mr. Krampert, material was introduced establishing that Dr. Grainger Brown, head of the Engineering Department of the University of Michigan, and Dr. Katz, associated with the same school, used the material balance method and that Dr. Katz was consultant to a committee which prepared estimates for the Oklahoma City Pool and that in calculating the ultimate recovery to be expected, the Committee used the material balance method. He stated that he had read that the material balance method was not designed for the purpose of estimating reserves for pipe lines and that Dr. Katz had said so. He thought he could find that statement

in some publication by the following day but if he succeeded in finding it the Board was not given the benefit of his search.

Mr. Krampert was asked if he knew very much about this method and his reply was "Nobody knows" but he later modified this statement by excepting Doctors Brown and Katz from its generality. The Board regarded this observation so seriously that Mr. Krampert was asked if his remark was intended to be jocular and pointed out that the necessary implication arising from it was that Dr. Boatright knew nothing about the material balance method. In the somewhat heated discussion which followed between witnesses and counsel, Mr. Krampert's answers indicated that in his opinion the only person who knew anything about the material balance method was Dr. Brown.

Why then he should attempt to criticize a method known only - in his opinion - to one man and why he should assume that Dr. Boatright, whom he met for the first time at this hearing, had failed to keep absolutely up to date in his profession, is not clear to the Board. The discussion, however, elicited the fact that Dr. Boatright had used this method in a number of other fields and that while the method is comparatively new it is now widely used in the United States.

The Board must therefore hold that Dr. Boatright would not lightly jeopardize his professional reputation by submitting an estimate arrived at by the use of an improper and worthless method and that his estimates must be taken into consideration in arriving at a final conclusion. It is true that he did not have all the critical data from the Turner Valley field but he made an allowance for possible error.

As has already been stated, the Commissioners estimated that the reserves in the field available for pipe line transportation were 108,000,000 barrels, a result arrived at after a long hearing, after weighing and analyzing the evidence given by many able engineers who used different methods in arriving at their results. The Board is now invited to say that because of what has happened since 1938, it should hold that the Commissioners' figure was too high and that the Board should substitute a lower figure, preferably that suggested by Mr. Krampert.

The following are the alternative figures:

| | | |
|-----|--|------------------------------|
| (1) | The finding of the Commissioners | 108,000,000 |
| (2) | Mr. Stevens-Guille's
estimate of gasoline
production | 1,919,833 |
| | Mr. Taylor's estimate
of crude oil | <u>82,646,088</u> 84,565,921 |
| (3) | Mr. Krampert's estimate | 83,927,318 |
| (4) | Dr. Boatright's estimate | 111,300,000 |

On an application for directions made prior to the commencement of the hearing, the Board held that the onus was upon the company to establish that the life of the field was less than that determined by the Commissioners. The Board is of the opinion that the same principles should be invoked in this inquiry as are invoked in a Court of Law. To discharge the onus requires a preponderance of cogent convincing evidence and the Board is not satisfied that such evidence has been adduced nor is the Board convinced that the evidence led by the company demonstrates that the finding of the Commissioners respecting the life of the field was so patently erroneous that it should be interfered with. On the contrary the Board considers that the evidence

at the hearing demonstrates and corroborates the substantial accuracy of the Commissioners' finding. Dr. Boatright's final estimate, after making an allowance for possible error, is within three million barrels of the Commissioners' finding of 108,000,000 barrels.

Mr. Taylor's figure and that of Mr. Krampert are approximately 24,000,000 barrels short of the Commissioners' estimate but their figures were given as being almost absolute and make no provision for possible errors. What are these possible errors?

- (1) Production decline curves cannot be projected accurately because the extrapolation depends upon the personal interpretation to be placed upon the curve by the engineer.
- (2) Production decline curves only provide - subject to the degree of their accuracy - an estimate of the oil to be recovered from the wells included in the curves.
- (3) The ultimate recoverable reserves estimated by the decline curve method must be related to the number of wells to be drilled in the future. There are 135 possible sites still remaining, all of which may or may not be drilled but the drilling or non-drilling of them must naturally affect the total recoverable reserves.
- (4) The number of future wells may depend upon the demand for oil which will be reflected in the price of oil and so will be reflected in the economics of well drilling.
- (5) The past performance history of a well or group of wells is an important factor in extrapolation of the curve and the shorter the life of the

wells the less reliable is the estimate.

- (6) The drainage area of the respective wells is a factor to be considered and it was shown that in Turner Valley there is well-spacing of 20 acres, of 40 acres and in one instance a well where the drainage area may possibly be 160 acres.

With so many possibilities involved, the Board is unable to accept Mr. Krampert's dogmatic two and one-half per cent error factor. If a twenty per cent error allowance is used, Messrs. Taylor's and Krampert's figures will increase to roughly 100,000,000 barrels without making any allowance for naphtha and natural gasoline.

The Board has already pointed out that Mr. Stevens-Guille's figures are subject to certain assumptions and therefore to possible errors. Indeed a subject so technical as estimating oil reserves which cannot be seen and cannot be measured, where the two certain, known factors are, that oil is present and that a certain amount has already been produced, and where the other elements which enter into the problem are affected by so many intangibles, lends itself to such extreme variations of opinion that all these opinions may better be described as extremely intelligent guesses. These opinions, however, must form the basis of the Board's determination and in agreeing with and accepting as its finding the 108,000,000 barrels held by the Commissioners to be the recoverable content of the field, it reaches that agreement and acceptance not because of that finding per se but because in applying what the Board believes to be a reasonable percentage of error to the figures furnished by Messrs. Taylor and Krampert, the result is so close to Dr. Boatright's estimate and to the

Commissioners' findings that the Board would not be warranted in disturbing those findings. In arriving at this conclusion the Board does not overlook the fact that the factors used in reaching the 1939 result are in some respects different from those now used.

Terminal Storage

During the period the Company paid to Imperial Oil Limited the sum of \$14,000.00 annually as rental for certain storage tanks at the Calgary terminus of the pipe line, the total amount paid to the end of 1943 being \$62,811.83. This amount was charged on the company's books as an operating cost. If this amount was improperly charged the profits for the period and to the end of 1943 would be increased by that amount.

Mr. Frawley contended that the charge was improper and should be disallowed by the Board, while the Company maintained that not only was the item properly charged against operations but in any event, since it had not been challenged during the period, the Board now had no power to deal with it. It is pertinent to inquire upon whom the incidence of this charge for terminal storage falls. The evidence discloses that Imperial Oil Limited and the British American Oil Company Limited directly or through subsidiary or affiliated companies, either own or control production from producing wells in Turner Valley. These two companies have also entered into agreements to purchase oil produced by independent owners. The price paid to these independents is the subject of a computation which begins with the price of 37 gravity oil produced in the Cutbank Field in the State of Montana. From that price

certain deductions are made and one of these deductions is $9\frac{1}{2}$ cents per barrel to cover transportation to Calgary. It is true that the cost of this transportation is collected by the Company from Imperial or British American, but that cost is paid indirectly by producers of oil in the field. Thus the burden of transportation falls upon the producer.

Oil when produced at the well-head passes through an apparatus in which the natural gas produced with the oil is separated from it and from this separator the oil goes to storage tanks owned by the producer. When the producer's tank is ready for shipment the company's gauger measures the tank content, the oil is drawn off and passes into the pipe line for transportation to Calgary. In the Board's opinion, the property in the oil passes to the purchasers when the tank has been gauged and it becomes theirs to deal with or to handle as they may see fit. The company maintains storage tanks in the field, particularly at its main pumping station and no question can arise as to the need for such field storage. Such storage is analogous to a railway freight yard where goods are built up into trains and sorted out for further shipment. Terminal yardage is in a different category for if the consignee of goods fails to take delivery at the terminal he is the one who must pay demurrage. Dr. Boatright was of the opinion that there was ample storage in the field for all purposes and that additional storage at the terminal was not required.

Mr. Coultis, the Company's general manager, maintained that terminal storage is required so that in case refining difficulties arise preventing the shippers from taking delivery, terminal tankage will be available to

store the oil in the meantime and so prevent shutting down the entire system. He quoted an instance where British American refinery was obliged to empty some storage tanks in order to effect repairs and the pipe line company stored 33,478 barrels of oil for the period from 6th to 13th August, 1943, for that company. He stated that pipe lines must be kept operating continuously, particularly in the winter months to prevent oil from congealing and to prevent wax from forming in the lines. He further contended that in the case of a major break in the line there should be enough oil on hand in terminal storage to take care of requirements of independent refiners and to prevent tank cars required for rail shipment being unduly held up and also to take care of rail and truck shipments. In the final analysis this evidence simply means that the major refineries must not be inconvenienced; that there must be no demurrage or other charges on tank cars; that the independent refiners who are customers of and who buy crude oil from Imperial Oil must not have their operations interfered with and that the pipe lines must operate to capacity. No doubt there are sound economic reasons why the company and its customers desire to avoid these undesirable consequences but the vital question is, who should pay for the terminal storage service required. The producer of oil pays for transporting oil to Calgary and surely it is unjust to ask him to pay for terminal storage as well as for transportation. The producer's responsibility is at an end as soon as the oil in his tank has been gauged. Once the oil passes from his tanks his control over it is gone and the responsibility thereafter passes to the purchaser shippers. The Company is engaged in the

transportation business and if its customers desire storage facilities at the pipe line terminus, it is their duty to provide these facilities or to make suitable arrangements with the pipe line company for such storage and to pay for it. It is somewhat ironic to find that Imperial, by far the largest shipper of oil through the pipe line, receives from the pipe line company an annual payment of \$14,000.00 as rental for its own tanks in which its own oil is stored, all at the producer's expense. How this matter is treated in other jurisdictions is informative. Exhibit 42 filed by the company is the Oklahoma Pipe Line Company's tariff. This tariff includes regulations, one of which is:-

"Destination facilities; crude petroleum will be received for interstate transportation only when the shipper or consignee has provided the necessary facilities for receiving said crude petroleum as it arrives at destination."

Exhibit 78 also filed by the company is The Toronto Pipe Line Company's tariff. Regulation 3 is as follows:

"Storage necessarily incident to transportation and only such storage will be provided by the company and the shipper or consignee must provide facilities for receiving the oil at destination."

These exhibits confirm the Board's understanding that transportation charges and terminal storage charges, formerly considered as inclusive, have been divorced from each other for many years. There is, however, a further aspect of the question which must be considered. The Final Report of the Commissioners on Pipe Line Matters, (Exhibit 1) deals with terminal storage so far as it relates to loading of tank cars and tank trucks. Mr. Hull

had given evidence that the usual rate in the United States for this service was $2\frac{1}{2}$ cents per barrel. Mr. Hull was asked, "Just what does that include?" Mr. Hull - Answer - "That includes - that is the total charge for storing temporarily, temporary storage of the oil and when I say temporarily I mean a matter of a week or two weeks and the loading of the oil into tank cars or tank trucks."

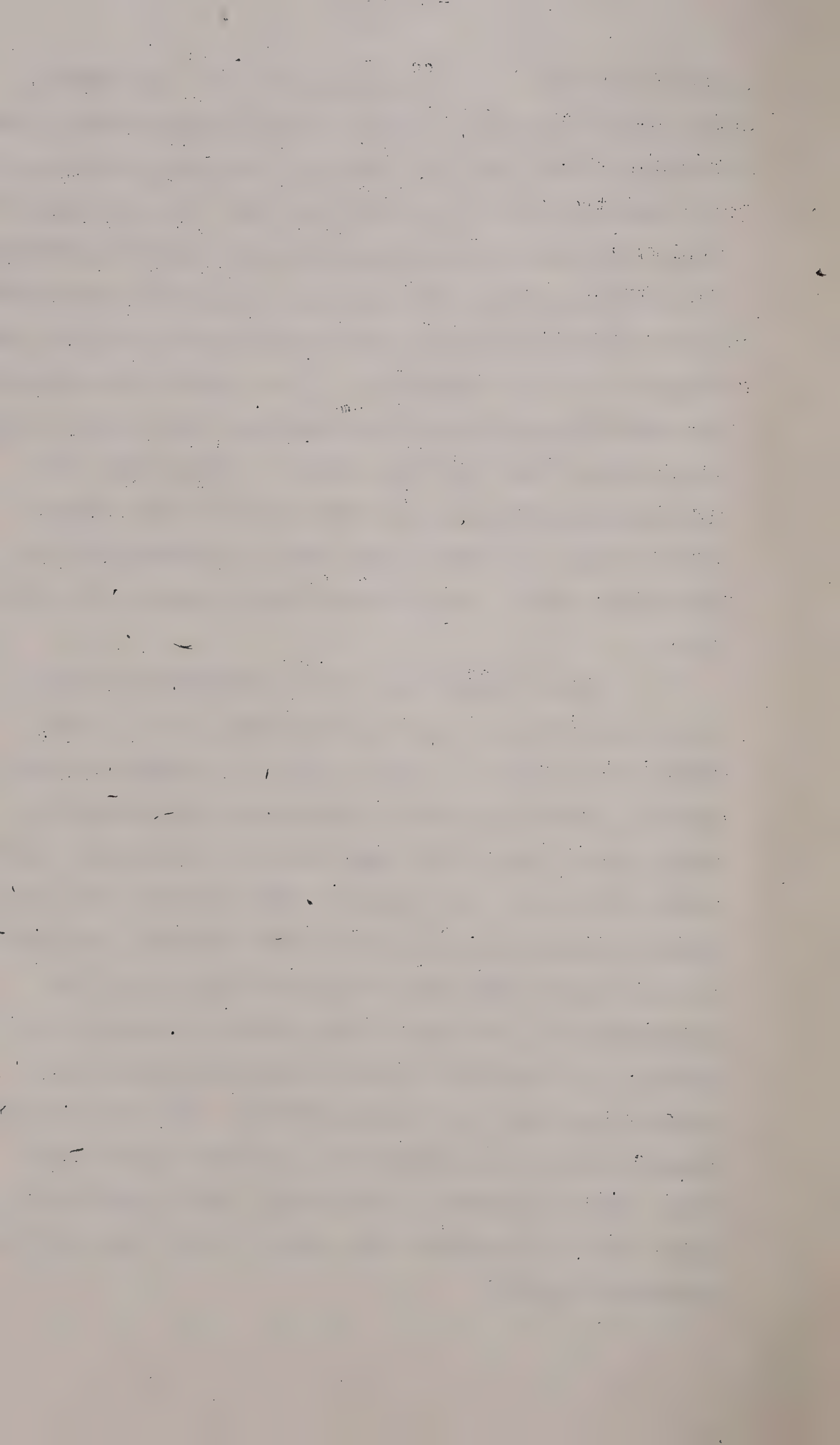
In adopting Mr. Hull's evidence, the Commissioners stated, "We would also recommend that it be directed that all necessary facilities be provided and that an adequate service be given at this rate. The rate proposed is distinct from the rate which we have recommended as a proper charge for gathering and transporting." It seems to the Board that these concluding words completely differentiate between transportation rates and rates for services whether for terminal storage relating to tank car and tank truck loading or to terminal storage generally. The Board is therefore of the opinion that the rent paid to Imperial Oil Limited was improperly charged to pipeline operating costs and must be disallowed. The disposal of this item and the company's further contention with respect to it, namely, that the Board has no power now to deal with it, will be dealt with under the heading "Computation and disposal of excess profits".

Depreciation

The Commissioners held that depreciation should be allowed to the company on the straight line method and the company followed and observed that decision, the amount charged in each year being approximately eight per cent, except in the case of cars and trucks which must be

depreciated at a greatly accelerated rate. As already mentioned, the company changed to unit depreciation on 30th September, 1945, when an adjusting entry was put through its books retroactive to 6th July, 1939. It was agreed by both sides and by all witnesses that in a utility company of this type, with a life limited by the life of the field, unit depreciation was fair and reasonable not only to the company but to the customer. If the recoverable reserves are estimated with reasonable accuracy, each barrel of oil going through the lines will bear its proper share of depreciation with the result that depreciation charges plus salvage recovered at the end of the useful life of the system, will enable the company to recover its investment.

Unit depreciation has an additional advantage in that the utility customers in the later years of the system's life will be paying their proper share of depreciation. Unit depreciation, therefore, will be allowed retroactively but on the basis that the recoverable content of the field as at 1st January, 1939, available for pipeline transportation, was 108,000,000 barrels. The Company charged depreciation using 70,322,788 barrels as the denominator in its calculations, which, as already mentioned, had the effect of increasing the depreciation reserve and wiping out excess profits. The depreciation thus charged by the company is in excess of the amount which will be allowed by the Board. This item will be dealt with in connection with excess profits and the disposition thereof.



Working Capital.

The Commissioners fixed the working capital required by the company at the sum of \$80,000.00, being \$30,000.00 cash working capital and \$50,000.00 for inventory and supplies. This amount was fixed or rather was adopted from evidence given by Mr. Hill, a witness called by Royalite at the hearing. He estimated that \$80,000.00 was a fair amount to be allowed for cash working capital and material and supplies. Before going further into this aspect of the problem, it is necessary to consider the item of \$43,165.69, being the cost of oil required to fill tank bottoms and pipelines. This item is discussed in the evidence of Mr. C. E. Young, Secretary-Treasurer of the Company. The Company was completely divorced from its parent on 6th July, 1939, since which date it has had an independent existence. On 31st December, 1941, the Company paid to Imperial Oil Limited the sum of \$43,165.69, being the estimated value of oil in the gathering lines, trunk lines and tank bottoms in Turner Valley and in the terminal storage so called in Calgary. Without oil in the lines and tank bottoms, the system could not operate but at the end of the company's life the lines will still be filled and the tank bottoms below the point of suction will be covered with oil. This oil was owned by Imperial Oil at the time the Company took over the system and since oil was needed for operation of the system it was quite proper to pay Imperial for it. The only question is whether the amount paid should be included in working capital or whether it should be treated as an extraordinary operating expense. It was so treated by the company for the reason it was considered that it would be difficult to estimate the eventual

recovery of the oil. This reasoning of course must be predicated on the assumption that the producers must not only pay the service charge but must also pay every other charge which will secure to the company absolute immunity from loss.

The Board is of the opinion and so directs that this item should be included in working capital and not in operating expense. It is just as essential to the working of the system as are the pipe lines themselves, or the valves on the pipe lines, or the pumps which force the oil through the lines. If it is treated as an operating expense the producers pay for it but at the end of the pipe line life the company owns the oil. This item will require to be reversed and be included in working capital upon which the company will be entitled to a rate of return. The final financial result may be to the company's benefit or it may take a loss depending upon the quantity recovered and the price of oil when that time comes. In the meantime the company will be earning a substantial rate of interest on its investment in this oil.

The company asserts that its working capital should be set at \$250,036.07, made up of \$64,012.00 being two months' cash operating expenses and \$186,024.07 representing supplies and equipment. Mr. Morrison and Mr. Humphries both agreed that \$30,000.00 is sufficient cash working capital so that there will be no change in this item. The amount to be allowed for supplies and material requires some consideration. At the hearing before the Commissioners, the witness Hill considered that \$50,000.00 was ample. The Company has in fact carried an average annual inventory of \$148,177.07 during the period. The 1939 inventory was \$135,225.06 and that of 1943 was

\$170,908.63. The Company contends that the extension of the gathering system during the period, the increased throughput, the change from steam to power pumps and the difficulty of securing material and equipment due to the war have made it necessary in the interests of efficient operation to carry a greater inventory than was required in 1939 and that some allowance should be made for the additional wartime cost of all material. The Board is of the opinion that there is much force in this contention. It must be remembered, however, that there is a distinction between working capital and funds used for capital additions, although it may be necessary due to wartime conditions for the company to carry a stock of material required for future capital improvements which, in normal times, could easily be secured and would not require the investment of capital funds until the material was actually required. Mr. Chambers pointed out that the working capital allowed by the Board to the Calgary Gas Company was very much greater than was allowed to this Company. That may be so but the difference in capital investment, the nature of the service rendered, the commodity furnished and the number of customers must have some effect on the working capital to be allowed. The Board on the one hand must guard against the possibility that funds could be invested in capital inventory so as to earn a substantial rate of return thereon and therefore should restrict inventory to an amount reasonably required to make repairs when needed and perhaps should make some allowance for material required for future capital additions. There is no fixed rule, there is no fixed relationship between invested capital and inventory to enable any precise determination being made. Each case presents a different problem and must be determined on the

pertinent applicable facts. The amount asked by the company represents almost twenty per cent of its depreciated capital investment and this amount would appear to be excessive and is in fact over one hundred per cent more than Mr. Hill's estimated requirements. The price of materials and supplies today is roughly twenty-five per cent greater than in 1938. It has been held, and the Board agrees, that in the absence of evidence establishing that the amount carried in inventory is excessive, there is no reason to hold that the amounts asked for are more than are necessary. Exhibit 90, however, shows pipe, pump equipment, valves and fittings and miscellaneous equipment on hand at 31st October, 1943, valued at \$170,256.10.

Obviously a substantial part of this inventory consists of materials not required for day to day maintenance but for future capital additions. The Board is of the opinion that part of this amount should be allowed. The working capital will therefore be placed at the sum of \$173,000.00, as follows:

| | |
|--------------|--------------|
| Cash | \$30,000.00 |
| Inventory | 100,000.00 |
| Oil in lines | 43,000.00 |
| | <hr/> |
| | \$173,000.00 |
| | <hr/> |

This allowance is made only because of the difficulty in securing material and supplies due to the war. The company will be required to submit to the Board an inventory of material and supplies, distinguishing as far as it is possible to do so between maintenance supplies and capital supplies, so that the matter may be considered again at the end of the current year. In the meantime, the Company will be entitled to one-half year's interest at the rate of

eight per cent per annum on the net annual capital additions, retroactive to the commencement of the Company's operations.

Deductions for pipe line losses
and reserve for damage claims.

Prior to the 1938 hearing, the company deducted from all oil shipments two per cent in the case of naphtha and one per cent in the case of crude oil to cover pipe line losses. The Commissioners did not recommend any reduction in the naphtha pipe line loss rate but did recommend that the deductions for crude oil losses be reduced from one per cent to not more than three-quarters of one per cent.

The excess of deductions over losses produced a gross revenue during the period of \$222,095.00, as follows:

| | | |
|------------|------|---------------------|
| (6 months) | 1939 | \$28,572.80 |
| | 1940 | 65,471.38 |
| | 1941 | 52,046.33 |
| | 1942 | 43,908.30 |
| (9 months) | 1943 | <u>32,096.80</u> |
| | | <u>\$222,095.61</u> |

The company charged to this pipe line adjustment account the sum of \$43,165.69 for oil in the lines and tank bottoms. The sum of \$40,155.43 was charged as a reserve to provide for major damage claims and they have allocated to this account the sum of \$65,721.26 for income tax, leaving a net profit of \$70,053.23. The purpose of pipe line deductions is to insure against loss through leakage and evaporation and not to provide revenue, so that any amount allowed in excess of a reasonable deduction is unfair to the shipper. Not only is he deprived of some of his oil but in effect he is paying an amount of income tax

which otherwise he would not be called upon to pay. The tabulation in Exhibit 5 shows that a deduction of three-quarters of one per cent on crude oil is much too great a deduction and that it should be reduced to one-half of one per cent, and in the case of naphtha the proper deduction should not be more than one and one-half per cent. These amounts will be allowed in future and until further order.

At the moment, the Board is not disposed to disturb the reserve of \$40,000.00 set up by the company to provide for major losses. It is true that claims paid by the company under this heading during the period amount to \$155.43 which in relation to the total throughput is negligible. The evidence indicates, and the Board knows from its own experience, that no matter how well constructed a line may be and no matter how good the quality of the material used, a pipe line, subjected to the extremes of climate experienced in this province, may break at any time, resulting in a loss of oil and damage to the property of others before repairs can be made. The Board does not pretend to say upon whom such damage should fall but considers that the company should have a reserve to provide for the contingency that it may be held liable for such loss. The alternative to the creation of a reserve for this purpose is that the company should secure insurance in which case the premiums therefor would be chargesble against operations. On this phase, Mr. Sidney Robbins, Manager of the Insurance Department of Toole Peet and Company, was called as a witness. It appears that the company carries a policy of the General Accident Assurance Company whereby for a premium of \$165.00 it is assured against liability for personal injuries to or death of individuals and is assured to the extent of \$15,000.00 against liability

for damage to property but excluding damage to its own property. This exception would probably preclude the company from receiving any indemnity for the loss of oil. Mr. Robbins, however, was of the opinion that a policy could be obtained to cover all these possible losses. His evidence was quite pertinent and very valuable. For the time being the Board will allow the retention by the company of the reserve already set up. The Company, however, must make extensive and exhaustive inquiries to ascertain if adequate insurance coverage can be secured and when that information has been obtained, further consideration will be given to this aspect of the question.

Computation of Profits

This aspect of the case provoked much discussion and marked difference of opinion. The rate base determined by the Commissioners was \$1,572,984.04 which figure was adjusted by the Company on 6th July, 1939, to a final figure of \$1,457,372.60. Should the rate of return be calculated for the period from 6th July, 1939, to 31st December, 1943, on the rate base as determined by the Commissioners? Obviously not, since that amount of capital was never used at any time during the period. That being so, should the computation be made on the sum of \$1,457,372.60, being the adjusted rate base? Again the answer is no and for the same reason. A rate base is merely the value of the assets used and useful required to furnish service, less depreciation properly charged, plus working capital reasonably required in rendering service or supplying a commodity. During each year since the company commenced business, it made capital additions and at the end of each year it charged depreciation.

Depreciation reserve is intended to represent the loss in value of property resulting from wear and tear, decay, obsolescence, and the forces of nature. Theoretically, this reserve is available for return to the shareholders as a repayment of capital. If such a return were made each year then, when capital additions were required, it would be necessary to raise fresh capital for the purpose. Such a circuitous procedure would be stupid and unnecessary and so capital additions are made from depreciation reserve. Thus at the end of any fiscal year the used and useful assets consist of the original assets plus net capital additions, less total depreciation up to the date on which the computation is made. Keeping in mind the proper construction of a rate base and the fact that a utility company is subject to regulation in the public interest, it would be a travesty of regulation if the company were allowed $9\frac{1}{2}$ per cent per annum on a static rate base for a number of years irrespective of the depreciation charged each year or the annual capital additions. It should be remembered too that the service rate is made up of items which include repairs, maintenance, depreciation and the rate of return. It is the customers who provide the depreciation reserve in the rates which they pay for service. It would be the negation of regulation to allow the company to earn $9\frac{1}{2}$ per cent per annum on an amount of capital returned to the company by way of depreciation out of the service rate. It would be equally unjust to limit the company to a rate of $9\frac{1}{2}$ per cent on an original static rate base if in any year the cost of capital additions exceeded the depreciation charged in that year. In such case fresh capital would be required and that fresh capital would be entitled to a rate of return. Indeed, should

such an event happen, the Board has no doubt that the company would promptly apply for such an adjustment in its rate base and service rate as would remedy what otherwise would be unjust and unreasonable. The Board is directed by Statute to fix just and reasonable rates and in doing so must have regard to the rate base, which, if unjust and unreasonable, must reflect these qualities in the service rate. The Company, however, says the Commissioners determined its rate base and that as determined so it must remain until altered by the Board. The Board is unable to agree. The rate base determined by the Commissioners was merely one step taken by them in fixing just and reasonable rates. That rate base was not set up in the company's books for the very reason that it was merely one step in an arithmetic computation. The used and useful assets employed by the company are disclosed in its books and at the end of each year the actual rate base can easily be determined. It is on the actual and not on the theoretical rate base that the company is allowed to earn its rate of return. If, by the use of the unit method of depreciation, and if, through an increase in or a level throughput, the company recovered its whole capital in the next few years, would it still be entitled to make $9\frac{1}{2}$ per cent on its original capital merely because there had not been a formal order of the Board altering that rate base? Such a suggestion would be preposterous and yet that is implicit in the company's contention.

In his evidence, Mr. Humphries stated that for the purpose of showing the return on the rate base, the rate base had not been changed during the period and that the company was entitled to a return on that rate base

until it was changed by the Board. That is another way of saying that because $9\frac{1}{2}$ per cent per annum in the Commissioners' service rate computation was equal to \$150,383.48 on an estimated investment of \$1,572,984.04, the company was entitled to earn four and one-half times that amount between the period from 6th July, 1939, to 31st December, 1943. That argument is fallacious because it assumes that all the items used in arriving at the service rate were fixed and certain whereas they were only estimates of operating costs submitted by the company and accepted by the Commissioners. One of these items was the sum of \$69,500.00 allowed by the Commissioners as an operating charge and representing the amortization over a period of eighteen years of the estimated total capital additions which would be required during the ten years immediately following the inquiry. That figure was nothing more than another step in the calculation which was intended to lead to a just and reasonable service rate.

If the figure \$150,383.48 in the Commissioners' service rate computation is to be regarded as a fixed amount, no more and no less, then why should not all the factors going into the service rate be so regarded. If so, then the company would be restricted in its operating costs to the amounts shown in the tabulation for the service rate; would be restricted to an income tax deduction as shown therein and would be restricted to the amounts of all other allowances given. The company in fact - quite properly - disregarded these estimates and confined its book-keeping to realities and in particular changed its depreciation rate when it suited its purpose to do so. It cannot "blow hot and cold" - if it adopts one figure in the computation which is to its advantage it cannot

summarily reject all the others. It dealt in realities as the Board proposes to do.

Mr. Humphries was quite frank in stating that because of the increased throughput, excess earnings over $9\frac{1}{2}$ per cent on the rate base recommended by the Commissioners would be shown and that alternative statements were accordingly prepared. Mr. Humphries moreover says that the shareholders invested approximately \$1,450,000.00 in the company in 1939 and had not had one cent of capital back and so inferentially suggests that $9\frac{1}{2}$ per cent should be allowed on that amount of invested capital throughout the period. That, however, is something for the determination of the directors. No doubt the directors and shareholders were quite satisfied to leave all the original capital intact and in the company in order that it could earn a generous rate of $9\frac{1}{2}$ per cent. If, however, the company's capital is more than is used and usefully employed, it is not entitled to $9\frac{1}{2}$ per cent on that excess which is not exposed to the risks and hazards of this type of public utility. On the other hand, if the directors consider it inadvisable to make any capital repayment they can, if they so desire, invest the surplus capital in some form of security which would yield a rate of return commensurate with the risk of that security. Mr. Humphries, however, says that so long as the capital is still in the business and not returned to the shareholders, they are entitled to a return on it. With that general principle the Board has no quarrel but it is unable to agree that the utility customer should pay $9\frac{1}{2}$ per cent on any portion of the capital which is not used and useful in the business.

Mr. Latham agreed that the rate of return on the depreciation reserve should be less than the rate allowed

on capital used and useful in the business but considered that the rate allowed should be higher than would be earned on an ordinary investment, his reason being that the depreciation reserve had to be kept in the business. His theory in this respect is the same as Mr. Morrison's, namely, that the depreciation reserve is not exposed to the hazards of the business and should not carry the same rate as assets which are so exposed. He agreed with some reservations that in the case of this particular utility a certain part of the return on the rate base should be extinguished as the depreciation reserve is provided. He says that to make such a deduction every year is to make the company a money lender. If by that he means that a money lender should not be allowed interest after his loan is repaid and if he means that a utility company becomes like a money lender because it is not allowed a return on its depreciation reserve, the Board agrees with him and sees no good reason why the two are not exactly on the same footing up to the point, if it ever arrives, that the company has received its investment back. From that point on different considerations might apply.

If the Company were being brought under regulation for the first time today, all parties agree that its rate base would be arrived at by adopting some basis of valuation of its used and useful assets, less accrued depreciation, plus an allowance for working capital. Its actual invested capital might be much greater than the amount so arrived at but its rate of return would be computed on the rate base and not on its total invested capital. That being so, it is difficult to understand why a rate base should be considered as static and subject to alteration only at hearings. If that principle is sound its adoption would nullify

regulation.

Mr. Humphries agreed that beginning with the year 1944 the rate base should be adjusted each year by adding capital additions and deducting depreciation and that such a course would be fair to everyone. It seems to the Board that in computing profits it is quite proper to apply that principle retrospectively, so that when profits are ascertained annually the rate base should be on an annual basis. Mr. Humphries suggested that funds were not always available to enable a return of capital being made to the shareholder. This much, however, is clear, that the depreciation reserve is set up out of cash revenues and should be represented by cash less the amount expended for proper capital additions. What the company may do with that cash is its own business. If it chooses to invest depreciation reserve in material required for anticipated and estimated future capital additions not authorized by the Board or for other purposes not within the scope of the Board's jurisdiction or for any purpose not authorized by the Board, it is, of course, free to do so. That, however, in no way negatives the principle that it is not entitled to earn $9\frac{1}{2}$ per cent per annum on its depreciation reserve. It is quite clear from the statements filed that the amount set up for depreciation each year has been in excess of the actual capital additions. If the annual throughput is on the decline as it would appear to be and since for that reason capital additions must necessarily decline, and since unit depreciation will be related to throughput, there appears to be no good reason to expect that annual capital expenditures will at any time in future exceed the annual depreciation. To leave the quantum, disposition, and apportionment of the depreciation reserve completely in the decision of the directors would

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be to substitute their judgment for that of the Board so that they and not the Board would decide how a just and reasonable rate should be arrived at. If that were permitted, the Board is satisfied that the words "just and reasonable" would relate only to the directors' viewpoint and that the interests of the customers would receive scant attention. The real explanation of the company's contention is that it was perfectly satisfied to work on a static rate base so long as the depreciation charges were equal to or greater than the capital expenditures - as well it might - and was not concerned with the disposition of the depreciation reserve. Much more could be said but any further comment would merely be variable repetition.

Dr. Boatright, who taught economics in relation to pipe line matters in the Colorado School of Mines, expressed the opinion that a rate base should constantly be depreciated from year to year except in a year when capital improvements are greater than the depreciation charged in that year. This procedure would probably result in a constantly decreasing rate base and a constantly mounting depreciation reserve. He could not subscribe to the theory of a static rate base as against a depreciating rate base.

Let it be said that the issue is not one between the shareholders of the company and the directors but it between the company and its customers who are the large number of individual oil operators, producing oil companies and their shareholders, royalty companies, and royalty holders and the issue is whether or not the rate which they pay is to include a rate of return on amounts which the company has received by way of depreciation out of the service rate paid by them.

The matter of dividends is of interest. In the statement which appeared later, the profits amount to \$1,159,781.39. Dividends paid during the period amount to \$675,000.00. The rate of $9\frac{1}{2}$ per cent per annum applied to the variable rate base would realize the sum of \$662,335.59 so that \$12,664.41 has been paid in dividends in excess of $9\frac{1}{2}$ per cent per annum and in the issue here that sum represents a return of capital. As between the company and the shareholders these payments may be dividends properly payable under The Companies Act but in relation to rates charged by the company these dividends are only just and reasonable to the extent that they represent $9\frac{1}{2}$ per cent on the used and useful capital employed and as to the excess are unjust and unreasonable to the shippers.

Mr. Morrison produced a statement, Exhibit 81, which will be dealt with when dealing with the disposition of excess profits and it is sufficient for present purposes to point out that it was based upon a variable rate base beginning with the 1939 adjusted figure, adding capital additions made each year and deducting unit depreciation. Thus there is a new rate base on the first day of each year as opposed to the static rate base contended for by the company. Mr. Morrison was of the opinion that this was a proper procedure to follow in the computation of profits. In support of his opinion he relied upon the report of a Committee on Depreciation created for the purpose in 1937 by the National Association of Railroad and Utilities Commissioners. The Committee's report was delivered and published in 1943. Chapter 10 of the report is devoted to a consideration of depreciation as related to the rate

bases of utility companies. In that chapter, the Committee refers to Cumberland Telephone Company, 212 U.S.414, where the Court said:

"It certainly was not proper for the complainant to take the money, or any portion of it, which it received as a result of the rates under which it was operating, and so to use it, or any part of it, as to permit the company to add to its capital account, upon which it was paying dividends to shareholders. If that were allowable, it would be collecting money to pay for depreciation of the property, and, having collected it, to use it in another way, upon which the complainant would obtain a return and distribute it to its stockholders."

The same Committee also asked for opinions from accounting instructors, engineering instructors, accounting firms and others on the following statement:

"The same factors that cause annual depreciation expense also cause depreciation to be deducted from property in determining the rate base."

This statement was approved by a substantial majority of the replies received.

The construction of a rate base when a company first comes under regulation is merely a determination of the assets used and useful at that time. It is nothing more than a starting point and it is not to be inferred that such a rate base is fixed for all time or until a customer complains and has it changed, or until the utility considers that it should be increased. The rate to be earned is to be earned with relation to the value of certain assets in determining which there are well known standards. If the value of the assets remains static that

is the measure to which the rate of return is applied and similarly if the assets decrease or increase it is on the value of the assets from time to time and not on the value at the starting point that return is to be computed. The Board, therefore, is of the opinion that in computing the rate of return and excess profits, each year must be considered separately, and the actual rate base for each year must be the basis on which annual profits are determined. That method is just and reasonable to the company in that it allows $9\frac{1}{2}$ per cent per annum on its used and useful assets employed and is just and reasonable to the utility customer in that it disallows any rate on capital which has been returned to the company by way of depreciation. Schedule "A" appended hereto is a statement of the company's profits computed on this basis for the period.

In preparing this statement, unit depreciation has been allowed retroactively, using 108,000,000 barrels as the starting denominator; the charge for terminal storage has been eliminated, revenue from pipe line deductions has been included, a reserve of \$40,000.00 for major losses has been allowed and the \$43,000.00 for oil in the lines and tanks has been taken from operating expenses and included in working capital. It will be seen that after allowing a return of $9\frac{1}{2}$ per cent per annum on a yearly rate base constructed on this basis the company has earned \$497,445.80 in excess of $9\frac{1}{2}$ per cent per annum.

Disposition of Excess Profits

In dealing with this phase it should be mentioned that the Board had an interview with company officials and

their solicitor, prior to a date being set for the hearing. They were advised that the Board believed profits had been made in excess of $9\frac{1}{2}$ per cent per annum and they were further advised that if that assumption proved to be correct the Board would feel obliged to make some disposition of the amount ascertained. Mr. Frawley was also advised by the Board that such a course was contemplated with the result that Counsel for the company and the Province were able to present their considered views on this important phase of the question.

For the Company, Mr. Chambers submitted as a general principle that since profits (irrespective of the method of computing them) had been earned on a rate base and at a rate fixed by the Board, these profits had been legally earned and that any disposition of them at this time, other than allowing the company to keep them intact, would amount to confiscation. On the other hand. Mr. Frawley contended that any profits in excess of $9\frac{1}{2}$ per cent per annum indicated that the rates charged were unjust and unreasonable and could and should be taken into account in fixing future rates. Mr. Chambers submitted that the Board's jurisdiction was limited to the fixing of "just and reasonable" rates to be charged thereafter and if excess profits earned in the past were used in determining future rates, the Board would be doing indirectly something which it had no power to do directly. He contended further that when rates were first recommended by the Commissioners their function and their only function under the terms of their appointment was to fix "what the fair and equitable rates for such gathering, handling and transporting should be". That was, in his submission, the sole authority conferred upon the Commissioners.

He emphasized that the Commissioners were of the opinion that a rate of $9\frac{1}{2}$ per cent upon the amount fixed in the rate base as the present depreciated value of the property used and useful in public service "is a fair rate of return" and from that he argued that the rate base as found was static until changed by Order of the Board. His contention in this respect is simply illustrative of the fact that the use of an isolated paragraph in any report or decision or judgment is not necessarily demonstrative of the whole and in this particular instance the Board considers that the whole report should be considered in conjunction with well recognized regulatory principles. If we consider for a moment the items used the the Commissioners in arriving at the service rate we find that they are nearly all estimates made by the company or by company witnesses and so are only estimated factors used for arriving at a rate per barrel. In this connection Mr. Chambers admitted during the argument that the figure of \$69,500.00 provided for the amortization of future capital expenditures was a mere computation used in arriving at a rate per barrel; that if that figure were accurate the rate of $9\frac{1}{2}$ per cent would be fair and if not accurate the rate might be more than or less than fair.

Mr. Chambers referred to another of the recommendations made by the Commissioners, namely:-

"Having regard to all of the foregoing we recommend a service rate of $9\frac{1}{2}$ cents per barrel for the movement of petroleum and petroleum products whether from the wells, the absorption plants or elsewhere in the Turner Valley Field to refiners' storage and terminal tanks in Calgary.

"We have found that the service rate in force of

1. The first part of the paper is devoted to a discussion of the

general principles of the theory of the structure of the

crystal lattice and the role of the defects in the

process of the deformation of the metal.

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15 cents per barrel for gathering and transporting should be reduced and we have so recommended."

It is on this single recommendation that Mr. Chambers premises his whole argument on this branch of the case.

The Pipe Line Regulation Act came into force on June 8th, 1939. Section 5 (2) provides that when an inquiry has been held into pipe line matters and when a recommendation fixing rates has been made following upon that inquiry, and when the rates so recommended have been approved by the Lieutenant Governor in Council -

"the Board is authorized and directed to make an order without any inquiry fixing the rates for the gathering, transporting, distributing, handling or delivering of petroleum at the rates recommended by the report."

By Order-in-Council dated 8th June, 1939, the recommendation that $9\frac{1}{2}$ cents be fixed as the rate for gathering and transporting oil was approved and by Order No. 8728 the Board of Public Utility Commissioners fixed the rate accordingly. By a subsequent order No. 9198, dated 10th April, 1941, made pursuant to an appropriate Order-in-Council, the Board authorized a deduction of not more than three-quarters of one per cent for all crude oil handled to cover crude oil pipe line losses. The pipe line rate, the loading rate and the crude oil deduction allowances were the only recommendations made by the Commissioners which were followed by approval of the Lieutenant Governor in Council or by Orders of the Board.

Section 13 of The Pipe Line Regulation Act provides:-

(1) Every order made pursuant to this Act whether

by the Lieutenant Governor in Council or by the Board shall be laid upon the table of the Legislative Assembly within fourteen days after the commencement of the session held next after the making of such order.

- (2) All such orders shall take effect upon the making thereof or upon such later date as may be fixed thereby for that purpose and when made shall unless and until the same are disallowed by the Legislative Assembly at the Session thereof held next after the making of the same have the same force and effect as if the same had been enacted as a part of this Act.

It should be pointed out that since jurisdiction to deal with rates is vested in the Board and since no rates can be fixed by the Board without notice to and hearing of interested parties, Section 5 (2) of The Pipe Line Regulation Act was a statutory provision giving the Board power to fix pipe line rates without holding an inquiry.

The Company contends that Board Order No. 8728 had the force of a statute and that it fixed the rate which the company could charge, namely, $9\frac{1}{2}$ cents per barrel. The order makes no reference to a rate base, to a rate of return, to naphtha or crude oil pipe line losses, to terminal storage, or to operating expenses, depreciation, income tax or the many other matters dealt with by the Commissioners. Mr. Chambers contends that since the order is silent on these points, the Company is entitled to charge $9\frac{1}{2}$ cents per barrel, and no matter what the result may be, no matter what the resultant profit may be, the Board cannot and must not look beyond the order itself,

cannot relate profits to $9\frac{1}{2}$ per cent per annum or to any other factor, nor relate the result to any regulatory or utility principle. It is contended that because the rate is fixed by statute, the results arising therefrom may be examined but while there may be profits, these profits cannot be related to $9\frac{1}{2}$ per cent per annum and there can be no excess profits and in a consideration of future rates the Board has no right or power to deal with amounts earned under the statutory rate. He concedes that although the rate is statutory the Board has power to revise it by virtue of its powers under The Public Utilities Act but that in doing so has no power to deal in any way with profits earned up to the time of rate revision. The Board agrees that if excess profits have been made, it has no power to deprive the company of these profits, but it is of the opinion that it has the right to take profits into account in arriving at new rates and it is immaterial whether the book-keeping methods used by the company show excess profits or excess depreciation. Mr. Chambers denies that the Board has that power because, as he says, the statute which fixed the rate did not confer such a power and he contends that any attempt to take profits into consideration would amount to confiscation. He referred to *Bond vs. Norman* (1940) 2 All E.R. 12 (C.A.), where Greene, M.R., quoted with approval a passage in the judgment of Sir William Brett, in *A.G. vs. Horner*:

"..... it is a proper rule of construction not to construe an Act of Parliament as interfering with or injuring persons rights without compensation unless one is obliged to so construe it."

The closing words of this passage appear to the Board to be very applicable to the point under consideration. The

company is subject to regulation in the public interest and in attempting to preserve that interest and at the same time trying to avoid injustice to the company, the Board may require to apply different considerations to those which apply in adjudicating on the rights of individuals under a contract or statute.

That applies with greater force when in this case it is remembered that the Commissioners suggested that the rate be revised at the end of one year. To such a suggestion the company objects that since that recommendation was never approved by the Lieutenant Governor in Council nor authorized by an order of the Board, it had no force or effect.

Mr. Chambers quoted many cases which lay down the principle that a statute should not be held to take away private rights of property without compensation unless the intention to do so is in clear and unambiguous terms. The Board's Order fixes a rate of $9\frac{1}{2}$ cents per barrel and the company says that is a statutory rate and there is no difficulty in construing it; it means that is the rate which you can charge, less if you like but not more. Mr. Chambers admits that the Board's order must be read together with The Public Utilities Act. In the Board's opinion, it must be read not only with The Public Utilities Act but also with the whole of the Commissioners' findings and recommendations. The dominant consideration is the fixing of a rate which is just and reasonable to the carrier company and to the shipper. The company earned substantial excess profits which it converted into excess depreciation. It must be allowed to keep those profits but it should not be allowed to earn a rate of return in future on any basis which does not take these profits into account.

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How was the rate of $9\frac{1}{2}$ cents per barrel arrived at? The first step was to fix a rate base which, however, did not represent the assets used and useful as at 6th July, 1929, when the company commenced operations. The next steps were to ascertain from estimates prepared by the Company:-

- (1) operating expense;
- (2) losses on sales and retirements;
- (3) administration expenses;
- (4) income tax;
- (5) allowance for capital additions;
- (6) amortization;
- (7) the annual throughput of the lines.

None of these items were capable of precise determination; all of them were subject to the accuracy of the figures used by the persons who made the estimates. The final step was the determination of the rate of return to be allowed. The rate per barrel could not be fixed until all of these steps had been taken and the figures or estimated figures arrived at. Is the Board precluded from considering these items when the realities became known? The Company apparently considered that it had the right to do so because Mr. Lathan asserted repeatedly that the company had the right to earn $9\frac{1}{2}$ per cent per annum and that the company could not make capital additions if the rate base should be increased thereby, and Mr. Humphries went even further and asserted its right to earn \$150,383.48 each year on the rate base determined by the Commissioners, even although that rate base was never adopted by the company. One of the Board's functions is to protect utility customers against unfair and unreasonable rates so that when the company says we have made profits far in excess of $9\frac{1}{2}$ per cent

per annum, that is our good fortune, it is overlooking the rights of those persons for whose benefit it was placed under regulation. Are the relevant regulatory statutes to be construed strictly in favour of the company when its profits are in issue; is the rule forbidding confiscation of property without compensation to be invoked when excess profits or excessive depreciation are in issue and is the Board forbidden to consider that the company's customers have paid rates which yielded net revenue in excess of $9\frac{1}{2}$ per cent per annum and is it forbidden to consider that under the guise of a just and reasonable statutory rate of $9\frac{1}{2}$ cents per barrel the company in effect confiscates that excess amount? Is not the Board's function to determine what is just and reasonable to the company and its customers and should not the Board in discharging its responsibility to both parties consider all the findings and recommendations of the Commissioners, and consider, and in light of known facts, evaluate the estimates on which the Commissioners based their conclusions? The Board is of the opinion that not only has it the right but that it is its duty to do so.

The Company made its own disposition of excess profits by crediting those profits to depreciation reserve. It is true that its computation is made on a basis different from that of the Board but the fact remains that so far as its books are concerned, profits were shown on 29th September, 1943, after the payment of all operating charges. Out of these profits dividends had been paid from time to time and substantial profits still remained. The Company was given notice that the Board had in mind some disposition of excess profits and the company merely anticipated the Board by altering its system of computing depreciation and

by so doing it reduced the rate base value of its used and useful assets. It is not entitled to a rate of return on depreciation charged so that the only difference between the company, the other parties to the issue and the Board is a difference in amount and not a difference in principle. The Company's reply is that it can do as it pleases with its own property but that different principles apply when the Board proposes to do so. When it is considered that the Board has no intention of doing other than that which the company itself did, this argument loses its force. The Board at once agrees that it would be wrong to order the company to return to its customers all money earned in excess of $9\frac{1}{2}$ per cent per annum. It does not propose to take that step or to make such an order. It believes that in the exercise of its statutory power to fix just and reasonable rates it must take every factor into consideration.

The earnings in excess of $9\frac{1}{2}$ per cent per annum were, in the Board's opinion, available for return to the shareholders as a capital payment and if the directors do not wish so to return it that is for them to decide. The Board is satisfied that money represented by excess profits was no longer exposed to those hazards which made a generous $9\frac{1}{2}$ per cent rate just and reasonable. That being so, the company is not entitled to say, "We desire to retain this money in the business and just because of that desire our customers must continue to pay rates which will yield a maximum return to us." The Board does not dictate to the company what it shall do with its excess funds - that is beyond its functions - but the Board can determine on what capital structure the rate of return may be earned. These two matters are separate and distinct, one is for the company to decide and the other is for the Board.

It, however, has been said that depreciation charges are nothing more than an arbitrary write-down of property and that the purpose of depreciation is to provide for the retirement of property at cost less salvage. It may be that the depreciation reserve is a mere book-keeping entry and theoretically is a system whereby amortization of the plant takes place over an estimated period of the life of the asset. It may have no relation to actual depreciation which is affected by so many factors which operate in many different ways and speeds in different places and in different types of plant. Nevertheless the depreciation reserve represents cash returned to the company out of the service rate - cash paid by the utility customer, and it becomes a liability of the company to the shareholder. Its disposal is in the discretion of the directors. If they return it to the shareholders, the liability is discharged; if they invest it properly in capital additions the liability to that extent is discharged by the creation of capital assets. The pertinent point, however, and the one that concerns the utility customer and the Board is that the reserve is not exposed to the hazards of the business, it forms no part of the used and useful assets employed in the business and it contributes nothing to the service for which the customer pays.

The rate of $9\frac{1}{2}$ cents per barrel, recommended by the Commissioners, approved by Order-in-Council and fixed by Board Order, is related to and indeed is predicated upon the volume of business done, the operating expenses, the depreciation rate and finally upon $9\frac{1}{2}$ per cent per annum return on capital, and indeed the rate per barrel is expressly related in the Commissioners' report to all of

these factors. $9\frac{1}{2}$ per cent per annum free of income tax is an exceedingly generous rate of return. That generous rate is fixed because the company's investment must necessarily be for a relatively short term and the failure of the field or rapid decline of the field might create a situation wherein the company might find itself left with a useless plant for which only salvage value could be recovered. It is for these reasons that a generous rate was allowed but surely it cannot be maintained that depreciation written off and money available for return of capital, neither of which are exposed to those hazards, should continue to earn that generous rate.

The disposition of excess profits was dealt with by the Board in Wainwright Gas Company vs. Wainwright and its decision in that regard was considered by the Appellate Division of the Supreme Court of Alberta, 1930, 3 W.W.R. 337. In that case, the Board, without a formal hearing, approved a schedule of rates to be charged by the utility company to its customers. The schedule was based upon engineering estimates of the cost of constructing the system and operating costs. When the provisional rates were authorized, the company was advised that if actual costs of construction proved to be less than was estimated there would be a corresponding decrease in the allowance for capital investment. In due course the Board determined the amount of capital investment and determined fair and reasonable rates to be charged from and after that time. In the interim (three years) excessive depreciation was set up by the company, substantial fees were allowed to directors but no amounts were set aside for dividends or investment return. The Board reduced directors' fees, fixed what

it considered to be a proper basis for setting up depreciation and allowed ten per cent per annum as a fair rate of return. The result disclosed an accrued surplus of \$19,548.12 in excess of ten per cent per annum for the three year period. That amount was applied by the Board in the amortization fund and by so doing the future rates then fixed were affected. This disposition of these excess profits was approved by the Appellate Division. The fact that provisional rates which produced these excess profits were fixed subject to a final determination of the invested capital does not in any way affect the underlying principle. The basic consideration was that the company was not entitled and should not be permitted to earn more than ten per cent per annum on its invested capital.

Mr. Justice Mitchell, who delivered the majority judgment of the Court, said:-

"The Board having the right to fix its own procedure and full discretion as to what elements shall be considered in the rate structure was quite within its powers in fixing for the purpose of calculating the amount of amortization deemed desirable under the circumstances."

and again: -

"Some method of adjustment of an excessive "rate of return" had to be found in order to meet the view of the Board as to what was a fair and reasonable return on the investment consistent with the wishes of the consumers and I can see no objection to the consideration of past profits and the taking into account of the present financial status of the company in arriving at the result desired."

Reference might also be made to *Northwestern Utilities vs. City of Edmonton*, 1929, 3.C.R. 186, where Mr. Justice Lamont said:-

"..... it is the duty of the Board to fix rates which in its opinion will be fair and reasonable at the time the order is made and for the period for which they were fixed. If any wrong principle has been adopted it is the duty of the Board at the next revision to correct the error."

and again:-

"The items which should be included in the rate base cannot, in my opinion, be considered a question of jurisdiction or of law."

The question of jurisdiction in a somewhat different application but in principle quite applicable here was discussed by the Supreme Court of the United States in *Federal Power Commission vs. Hope Natural Gas Company*, 51 P.U.R. (N.S.) 193. The opinion of the Court was delivered by Mr. Justice Douglas on 3rd January, 1944. The subject in issue was the rates charged by the company to its customers. In delivering his opinion, Mr. Justice Douglas affirmed the principle established in *Federal Power Commission vs. The Natural Gas Pipe Line Company*, namely, that the Commission was not bound to the use of any single formula or combination of formulae in determining rates and that its rate-making function includes the making of pragmatic adjustments. This confirms the Board's concept of its right to deal with historic realities. Mr. Chambers, however, maintains that "We are entitled to earn 9½ cents per barrel and that is all that the Board is concerned with. That figure is not related to any other factor and if we make profits that is our business and if we lose money we

can apply for a new barrelage rate." On what basis would the company determine that it was losing money? Would it be when the rate of return fell below $9\frac{1}{2}$ per cent or some other smaller rate or would the company wait until its revenues failed to meet operating expenses? The Board has no doubt that if the company's rate failed to yield the $9\frac{1}{2}$ per cent per annum recommended by the Commissioners, an application would have been made at once for a rate revision, and agrees that such an application would be a proper one.

The Board is therefore of the opinion that the excess profits should be considered for the purposes of rate making as money available for return to the shareholders as a repayment of capital, and should therefore be deducted from the rate base. Mr. Frawley submitted that in determining the rate base each year during the period the annual excess profits should be deducted from the annual rate base. The Board will apply that principle in future but is of the opinion in the present case only the cumulative surplus for the period should be applied to reduce the rate base determined for the year 1944.

Rate of Return and Income Tax

The Commissioners were of the opinion that $9\frac{1}{2}$ per cent per annum was a reasonable rate of return to be allowed to the company and so recommended. A rate which is reasonable at one period of time may be quite unreasonable at another, - it may be too high or it may be too low. The only evidence introduced at the hearing relating to present value of money was a letter from James Richardson & Sons, addressed to Mr. Coultis, dated 4th January, 1944 (Exhibit 91). During the course of the hearing, the Board had

indicated that it was of the opinion that money was now cheaper than it was in 1938 and 1939 and no doubt the above letter was secured and filed by reason of the Board's remarks. It is a matter of common knowledge that money can be secured not only by the Dominion Government but by municipal corporations at a much lower rate than was possible some years ago.. The writer of the letter in question, however, was not called so that the Board did not have the benefit of cross-examination, although that fact is of no particular importance. The letter dealt with various types of securities and the return thereon. It was shown that the average yield from the Dominion of Canada 1938 bond issue was 3.075 per cent during the period from July to December, 1938, and that the average yield from the same security in 1943 was 3 per cent. This indicates that there has only been a slight variation in the rate of return on such securities although obviously the trend is downwards.

The average yield on industrial stocks was discussed and nine stocks listed on the Montreal Stock Exchange which have consistently paid dividends were selected for examination, the apparent result being that an investor who purchased one each of these nine stocks on 31st December, 1938, would have received a yield varying from 4.77 per cent to 6.41 per cent during the period December 1938 to December, 1943. In that case the trend was definitely upwards. To what extent the yield should be related to capital appreciation or capital depreciation was not shown.

Figures were given showing the composite Montreal Stock Exchange industrial averages for the same period. Using the year 1926 as 100, the average for twenty Montreal Stock Exchange industrials as at 31st December, 1938, was 84.9 and on December 1st, 1943, was 70.8. Obviously there

was a downward trend and while that trend might not have been so marked in relation to the nine consistent dividend paying stocks, the trend is there and if applied to the actual yield might have had some effect thereon.

The letter showed that the return on Royalite stock varied from 3.40 per cent on December 31st, 1938, to 4.82 in December 1943, the stock price varying during the same period from \$44.00 to \$20.75.

It is said that the shortening of the life of the field from eighteen to twelve years should be reflected in the rate of return to be allowed. It is not at all certain that the life of the field will be over in 1950 or 1951. The Commissioners based their calculations upon an estimated throughput of 6,000,000 barrels per year, an estimate which has proved to be too low and must necessarily have some effect on the life of the field. No matter whether the life be twelve years or eighteen years, the element of risk involved and all other relevant factors would, except for the consideration of the income tax problem, entitle the company to have the $9\frac{1}{2}$ per cent per annum rate continued. In other jurisdictions it is well established that income taxes in the case of a public utility are properly chargeable to operations. Formerly there were marked variations in the decisions of various regulatory bodies in the United States as to the propriety of allowing income tax as an operating charge. Some commissioners held that income tax was not a proper charge to operations, some on the ground that such taxes are levied against the individuals receiving income and other on the ground that since income tax is a tax on net income it should be borne by the owner of the utilities. Others maintained that a public utility should

bear its own burden of income tax like all other persons and should not pass that burden on to the user of its services or consumers of its commodity. The latter viewpoint appears to be Board to be based on logical common sense and is consonant with that equitable treatment to which the utility user is entitled.

Mr. Justice Brandeis in *Galveston Electric Company vs. Galveston*, P.U.R. 1922, D 159, said:

"There is no difference in this respect between state and federal taxes, or between income taxes and others but the fact that it is the federal corporate income tax for which deduction is made must be taken into consideration in determining what rate of return shall be deemed fair."

Following upon this decision it has been the practice of regulatory bodies in the United States to allow full income tax as an operating expense.

In the case of a company not under regulation, income tax is paid by the company on its net earnings and dividends paid are taxable in the hands of the shareholders, thus imposing double taxation. Under present utility practice, income tax ordinarily chargeable to the company is in fact paid by the utility customer in the service rate - in this case by the oil producer - while the utility company bears no part of this burden and dividends only are taxed in the shareholders' hands. Thus, the shareholder in a utility company is subject to the incidence of single taxation. Income tax and its incidence must have a place in any consideration of a just and reasonable rate of return. If the rate allowed is $9\frac{1}{2}$ per cent it actually means $9\frac{1}{2}$ per cent plus income tax. For the time being at least, the Board does not propose to depart from the general principle

from the 1st of January to the 31st of December.

The number of cases of the disease is

as follows: 1st January, 1885, 1 case.

2nd January, 1885, 1 case.

3rd January, 1885, 1 case.

4th January, 1885, 1 case.

5th January, 1885, 1 case.

6th January, 1885, 1 case.

7th January, 1885, 1 case.

8th January, 1885, 1 case.

9th January, 1885, 1 case.

10th January, 1885, 1 case.

11th January, 1885, 1 case.

12th January, 1885, 1 case.

13th January, 1885, 1 case.

14th January, 1885, 1 case.

15th January, 1885, 1 case.

16th January, 1885, 1 case.

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21st January, 1885, 1 case.

22nd January, 1885, 1 case.

23rd January, 1885, 1 case.

24th January, 1885, 1 case.

25th January, 1885, 1 case.

26th January, 1885, 1 case.

27th January, 1885, 1 case.

28th January, 1885, 1 case.

29th January, 1885, 1 case.

30th January, 1885, 1 case.

that income tax should be allowed as an operating expense but reserves the right to reconsider the question at some future time. That general principle, however, must presently be considered in light of existing abnormal conditions and the greatly increased burden of income tax due to war demands. In 1939, when the Commissioners made their final report, the combined Dominion and Provincial tax rate was 22 per cent which may be considered as the normal rate. Today the normal income tax rate so called (imposed by the Dominion authorities only) is 40 per cent. By reason of the substantial profits made by the company during the standard period (1936-1939) compared with its profits under regulation, it is unlikely that its rate will exceed 40 per cent in the future unless the normal and excess profits rate should be changed by Parliament. Is it proper under these circumstances to allow the full amount of present income tax to be imposed upon the customers of this company at a time when those who pay the service charge are themselves subject to the incidence of abnormal income tax in their own operations? The same question has arisen in the United States resulting in an apparent conflict of authority.

In Chicago District Electrical Generating Corporation, 39 P.U.R. (N.S.) 279, the Federal Power Commission allowed an item of \$45,600.00 being estimated excess profits tax as a proper item of expense.

In re Hampton Water Works Company, 43 P.U.R. (N.S.) at p. 33, the New Hampshire Public Utility Commission made an allowance for higher Federal taxes in operating expenses.

In re Hope Natural Gas Company, 44 P.U.R. (N.S.) 1, the Federal Power Commission allowed full income tax.

In Atlantic City Sewerage Company, 44 P.U.R. 50, the Supreme Court of New Jersey held that income taxes

assessed against a utility company are properly considered an operating expense, but pointed out that the nature of the charge may be a circumstance in determining what is a fair rate of return.

In re Kentucky - Tennessee Light and Power Company, 46 P.U.R. (N.S.) 277, the Kentucky Public Service Commission used the 1940 Federal tax rate instead of the rate existing at the time of its decision. This results in a disallowance of excess income tax as an operating expense.

In re New Haven Water Company, 49 P.U.R. (N. S.) 229, (the Connecticut Public Utilities Commission) the question of excluding war taxes was discussed but it was held that the discussion was academic in that the exclusion of war taxes would necessitate as a means of maintaining the integrity of the investment and insuring the ability of the company to render adequate service an appropriate modification in what constitutes a fair rate of return.

In re Orange and Rockland Electric Company, 49 P.U.R. (N.S.) 257, the New York Public Service Commission said:-

"But it does not seem fair or just to split the present federal income tax and place part on the stockholder and part upon the consumer. It seems much more equitable and practicable to consider the income tax as cost of service and give weight to this course when we come to determine what shall be allowed as return to shareholders."

In City of Detroit v. Detroit Edison Company, 50 P.U.R., 1, the Michigan full income tax was allowed as an operating charge.

The Federal Power Commission dealt with the same question in Detroit vs. Panhandle Eastern Pipe Line Company

45 P.U.R. (N.S.) p 203. Mr. Commissioner Scott says:

"Thus it appears that the doctrine of unjust enrichment as well as equity and good conscience compel the conclusion that a utility should not be permitted to thwart the purpose and spirit of the war price control legislation and the revenue laws by passing such abnormal tax requirements along to its consumers as an operating expense to be collected in increased rates. Indeed, we feel increased rates on such a basis would be unjustifiable. To allow them would in effect impose upon the consumers a sales tax."

In re Washington Gas Light Company 1935, 11 P.U.R. (N.S.) 469, the Commission disallowed excess profits taxes and held that it could not overlook the fact that the recognition of excess profits tax as a proper element in the determination of rates would result in a continuing cycle of rate increases severely penalizing the customer without materially benefitting the company.

Actually there is no conflict between all of these decisions. The imposition of excess taxes has simply renewed the discussions which were finally terminated by the decision in the Galveston case, supra. The effect of most of these decisions is that all income tax, normal or abnormal, should be allowed as an operating expense but that due regard should be given to this factor when fixing the rate of return.

A tax of forty per cent in wartime related to a tax of twenty-two per cent in peace time can be regarded as an excess profits tax in public utility matters. In the interests of equitable distribution of the tax burden such an abnormal tax should not be imposed in toto upon the utility customer.

The Board is of the opinion that some relief from this burden should be given to the utility customers and is of the opinion that in abnormal times and under abnormal conditions the company should bear a fair proportion of the burden imposed by a war which protects its very existence, just as the oil operators are bearing their share of the same burden for the same protection. The Board, however, is of the opinion that the incidence of the tax should be reflected in the rate of return, rather than by allowing as an operating charge an amount less than the actual income tax imposed. The Board is therefore of the opinion that the rate of return should be reduced from nine and one-half per cent to eight per cent per annum.

The Rate Base

By reason of what has already been said, the construction of a rate base for determination of the future service charge is merely a matter of arithmetic. It will be remembered that the rate base fixed by the Commissioners was related to the reproduction cost new of the plant at the time of the hearing less observed depreciation. At the hearing before this Board, Mr. L. G. Hill was called as a witness by the company. His evidence dealt with the valuations upon which the Commissioners arrived at their rate base and their relationship to present-day values. His evidence before the Board is that the cost of material and labour have increased between 1938 and the present time by approximately 23.2 per cent. However, the company's investment measured in terms of money was determined in 1939. It would be improper to say that the investment has increased as at this date merely because replacement value

has increased. If the company was coming under regulation for the first time today, the Board doubts if it would accept present reproduction costs as a basis but inclines to the view that reproduction costs (if it used that method) in a normal period would be the starting point of its calculations. It follows, therefore, that no change will be made in the 1939 valuation figures but capital additions made since July 1939 will be included at actual cost.

Mr. Chambers submitted that the new rate base should be the sum of \$1,192,592.56, made up as follows:

| | |
|--|------------------------------|
| Plant and equipment as at
1st January, 1944 | \$2,096,064.52 |
| Less depreciation reserve | <u>1,099,471.03</u> |
| | \$996,593.49 |
| Lands and rights of way | 17,822.00 |
| Cash working capital | 30,000.00 |
| Materials and supplies | 148,177.07 |
| | <u><u>\$1,192,592.56</u></u> |

He pointed out that the difference between this amount and the original investment, namely, \$264,780.04, is available for return to the shareholders and that such a return could be made without impairing working capital. The depreciation reserve of \$1,099,471.03 is calculated by the unit method and it, in the final analysis, reduces the rate base by an amount equal to the excess profits as they appeared in the company's books on 30th September, 1943. The Company says that the Board can adopt a rate base structure on this principle because the company does not object to its doing so, but that the Board has no inherent or statutory power to do so. The fact is that the company by its own submission concedes the principle which the Board believes to be the

proper one but merely disagrees with the arithmetic steps by which the final result is arrived at.

Mr. Morrison constructed a rate base embodying that principle but using different factors. To arrive at profits and in computing depreciation, he used 108,000,000 barrels as a starting denominator for unit depreciation as opposed to a starting denominator of 70,532,788 used by the Company. Since the Board has held that the recoverable reserves in the field available for pipe line transportation amounted to 108,000,000 barrels in 1939, that figure must be used to compute unit depreciation. It is proper to point out that the income tax payable by the company would have been much less than the amount actually paid had unit depreciation been used from the beginning, but the amount actually paid has been allowed by the Board in its final computation. Excess earnings over $9\frac{1}{2}$ per cent per annum have been credited by Mr. Morrison to depreciation reserve in each year as they were earned; oil in lines and tank bottoms has been included in assets as working capital and the balance of working capital is allowed at the sum of \$80,000.00 as fixed by the Commissioners. The result is as follows:

| | |
|---|----------------|
| Assets | \$2,044,997.73 |
| Lands and rights of way | 17,822.00 |
| Working capital | 80,000.00 |
| Inventory of oil in lines and
tank bottoms | 43,000.00 |
| | <hr/> |
| | \$2,185,819.73 |
| Reserve for depreciation | 1,476,327.47 |
| | <hr/> |
| | \$709,492.26 |
| | <hr/> |

The difference between the two suggested rate bases is accounted for by the difference in the methods used in

computing excess profits, the difference in depreciation reserve due to the denominator used and the difference in working capital. As was said before, the difference is one of degree and not of principle. Having regard to the estimated life of the field, the oil in lines and tanks and to working capital and having regard to all other factors previously discussed, the Board is of the opinion that the rate base shown in Schedule "B" appended hereto be the rate base for the year 1944.

Service Rate

The service rate is determined by ascertaining the revenue required by the company to meet operating costs, depreciation, income tax and to yield the allowed rate of return on its rate base. This revenue related to the throughput of the line gives the charge per barrel to be allowed. When the Commissioners fixed a rate of $9\frac{1}{2}$ cents per barrel they did so on the assumption that the annual throughput would be 6,000,000 barrels. The rapid development of the field and the advent of the war completely upset that estimate. In 1940, the throughput was 7,914,680 barrels and 1942 was considered to be the peak year with a throughput of 9,449,928 barrels. Unless an extension of the field is established or unless an immediately adjacent new field is discovered, it is reasonable to suppose that the throughput will decline gradually each year.

The business done by a gas, water, electric or telephone company can be estimated within reasonable limits and for a number of years in advance. The variations in expected revenues will not be marked although there will be fluctuations. If the Board attempted to fix a rate now

which would be applicable for the next three, four or five years, it might turn out to be quite unfair both to the company and to its customers. The Company, however, maintains that the Board should avoid fluctuating rates for future years and so guard against the possibility of prohibitive rates in the later declining years of the field. With that principle in its general application the Board has no quarrel, but it involves the proposal that the Board should fix rates now to be in force for a period of seven years - that is to the end of the company's estimated economic life of the field. The company's suggestion is:-

- (a) that a fund be established to which would be transferred each year any difference between transportation earnings and total cost;
- (b) surplus earnings from rates in excess of $9\frac{1}{2}$ per cent return would be transferred to the reserve fund to be withdrawn in years when the earnings would not provide the fixed rate of return on the rate base.

This suggestion is open to three objections.

The first is that the ultimate balance in the fund would be the property of the company and to the extent of any unused balance would represent earnings in excess of a just and reasonable rate. The second is that the present customers of the company must pay a rate in excess of that which is just and reasonable today in order that the customers of a few years hence will enjoy a rate which will be less than what is just and reasonable at that time. The third objection is that income tax will be payable on the net revenues of the company and the fact that part of this revenue is being transferred to a reserve account to take

care of future contingencies would not, in the Board's opinion, warrant the income tax authorities from refusing to collect income tax on the amount transferred to reserve. The company in this respect adopts the recommendations made by the Public Utility Commissioners of British Columbia to the Lieutenant Governor in Council of that Province in the report of its investigation into the rates and services of the B. C. Electric Railway Company. The Commissioners, while making that recommendation, pointed out that by reason of income and excess profits taxes the establishment of such a fund will necessarily have to be deferred. Such a fund in normal times might be quite proper in the case of a company with an assured life, lasting in fact as long as electricity is used, but this Board is of the opinion that such a fund is neither desirable nor practicable in the case of a company with a limited life and declining revenue. If the field declines, as is anticipated, capital additions will decrease, depreciation will have a direct relationship to the throughput of the line and the company's own estimates indicate that operating costs will decline and there is every reason to believe that at the conclusion of the war there will be a measure of relief from income tax. By reason of all of these factors, the company's rate base should decline, calling for a decrease in its service rate. The Board, therefore, considers that in the case of this particular utility, it is impossible to fix a just and reasonable rate for a period of more than one year at a time. The rate base, therefore, must be determined as soon as possible after the beginning of each year and in making that determination, excess profits of any amount will be credited to the depreciation reserve and the service rate

will be determined according to the nature and amount of all relevant factors. The service rate for 1944 will be 7.5 cents per barrel, the computation therefor appearing in Schedule C appended hereto.

It is now estimated by Mr. Coultis that the throughput for 1944 will be 7,998,802 barrels and not 8,207,200 barrels estimated by him at the time of the hearing, and the Board will adopt this estimate.

Costs

The question of costs was briefly discussed at that hearing. Section 50 of The Public Utilities Act gives the Board discretionary powers in the matter of costs, and costs of and incidental to any proceeding before the Board may be fixed at a sum certain and the Board may order by whom and to whom costs are to be paid.

In these proceedings the company's costs, including counsel fees, amount to \$23,886.58. The costs incurred by the Government, not including counsel fees, amount to \$11,626.88. These two items will be paid by the company and will be debited to depreciation reserve. In rate cases it is usual for the utility company to be called upon to pay costs but in many cases it is allowed to recover these costs through the service charge over a number of years. In this case, the Board considers that since the company has failed to justify a continuation of the original rate and since that rate enabled it to make substantial excess profits, it would be unjust to impose the costs of the hearing on the utility customers through the service rate. On the other hand, the company was amply justified in presenting to the Board evidence relating to the life

of the field and relating to other relevant matters. No injustice will be done by permitting the company to charge these costs to depreciation reserve since the 1944 rate base is naturally increased by the amount thereof.

The Board considers it proper to say that it will expect the benefit of the rate reduction to be passed on to the producers of oil in the field. It was suggested by Mr. Chambers that any reduction would not benefit the producers since the refinery companies were absorbing the transportation charge. That fact - if it is a fact - was not clearly demonstrated by evidence. The Board, however, has no jurisdiction over the refinery companies who are the utility company's immediate customers and it cannot make any order against them. The evidence, however, does indicate that transportation cost is part of the price structure of crude oil with the result that the reduction now made in the barrelage rate should accrue to the benefit of crude oil producers.

Conclusion

It has been impossible for the Board to deal in greater detail than it has done with the volume of evidence submitted to it, nor has it been possible to advert to all the submissions made by Counsel during four days of carefully prepared, reasoned, and ably delivered argument. The Board desires Counsel and their clients to know that it has read and re-read the evidence submitted, together with the Exhibits and the arguments presented but in its decision has dealt only with the main points relevant to its findings. If, therefore, Counsel should think that points considered by them to be important have been overlooked or not considered, they can rest assured that such is not the case.

The Board feels too that it is only proper that it should express to all Counsel its very great appreciation of the able assistance given by them during the hearing and in argument, and acknowledges the debt of gratitude which it owes to them for their able presentation of their respective cases.

THE BOARD OF PUBLIC UTILITY COMMISSIONERS,

"G. M. Blackstock"

CHAIRMAN

VALLEY PIPE LINE COMPANY **LIMITED**

STATEMENT SHOWING CALCULATION OF RATE BASE AND ^{EXCESS}
TO BE TRANSFERRED TO RESERVE FOR DEPRECIATION

| | <u>6TH JULY
1939</u> | <u>31ST DECEMBER
1939</u> | <u>31ST DECEMBER
1940</u> |
|---|--------------------------|-------------------------------|-------------------------------|
| PLANT AND EQUIPMENT AT REPLACEMENT
VALUATION, AS ARRIVED AT BY MCGILLIVRAY
COMMISSION, WITH SUBSEQUENT ADDITIONS
AT COST, LESS RETIREMENTS | \$1,529,128.43 | \$1,602,321.63 | \$1,719,974.83 |
| LAND AND RIGHTS OF WAY | 17,633.00 | 17,636.00 | 17,647.00 |
| WORKING CAPITAL, INCLUDING AN AMOUNT
OF \$43,000.00 TO COVER COST OF
FILLING LINES AND TANK BOTTOMS | <u>123,000.00</u> | <u>123,000.00</u> | <u>123,000.00</u> |
| | \$1,669,761.43 | \$1,742,957.63 | \$1,860,618.83 |
| LESS: RESERVE FOR DEPRECIATION
(AS ADJUSTED) | <u>169,388.83</u> | <u>223,620.79</u> | <u>329,350.22</u> |
| RATE BASE | <u>\$1,500,372.60</u> | <u>\$1,519,336.84</u> | <u>\$1,531,268.61</u> |
| | <u>1939</u> | <u>1940</u> | <u>1941</u> |
| RETURN AT $9\frac{1}{2}\%$ PER ANNUM ON RATE BASE
AT COMMENCEMENT OF YEAR | \$69,900.91 | \$144,337.00 | \$145,470.52 |
| ADD: ADDITIONAL RETURN IN RESPECT
OF NET CAPITAL ADDITIONS | <u>1,738.34</u> | <u>5,583.38</u> | <u>5,250.65</u> |
| | \$71,639.25 | \$149,920.38 | \$150,721.17 |
| NET PROFIT AS PER STATEMENT OF REVENUE
AND EXPENDITURE - SCHEDULE "A-1" | <u>158,485.60</u> | <u>282,738.22</u> | <u>251,657.09</u> |
| EXCESS PROFITS TRANSFERRED TO
RESERVE FOR DEPRECIATION | <u>\$86,846.35</u> | <u>\$132,817.84</u> | <u>\$100,935.92</u> |

SCHEDULE "A"

LIMITED

AND EXCESS PROFITS
DEPRECIATION

| DECEMBER | 31ST DECEMBER
1941 | 31ST DECEMBER
1942 |
|----------|-----------------------|-----------------------|
| 1.83 | \$1,830,512.00 | \$1,916,550.85 |
| 7.00 | 17,778.00 | 17,806.00 |
| 0.00 | 123,000.00 | 123,000.00 |
| 8.83 | \$1,971,290.00 | \$2,057,356.85 |
| 0.22 | 465,861.20 | 615,497.19 |
| 8.61 | \$1,505,428.80 | \$1,441,859.66 |

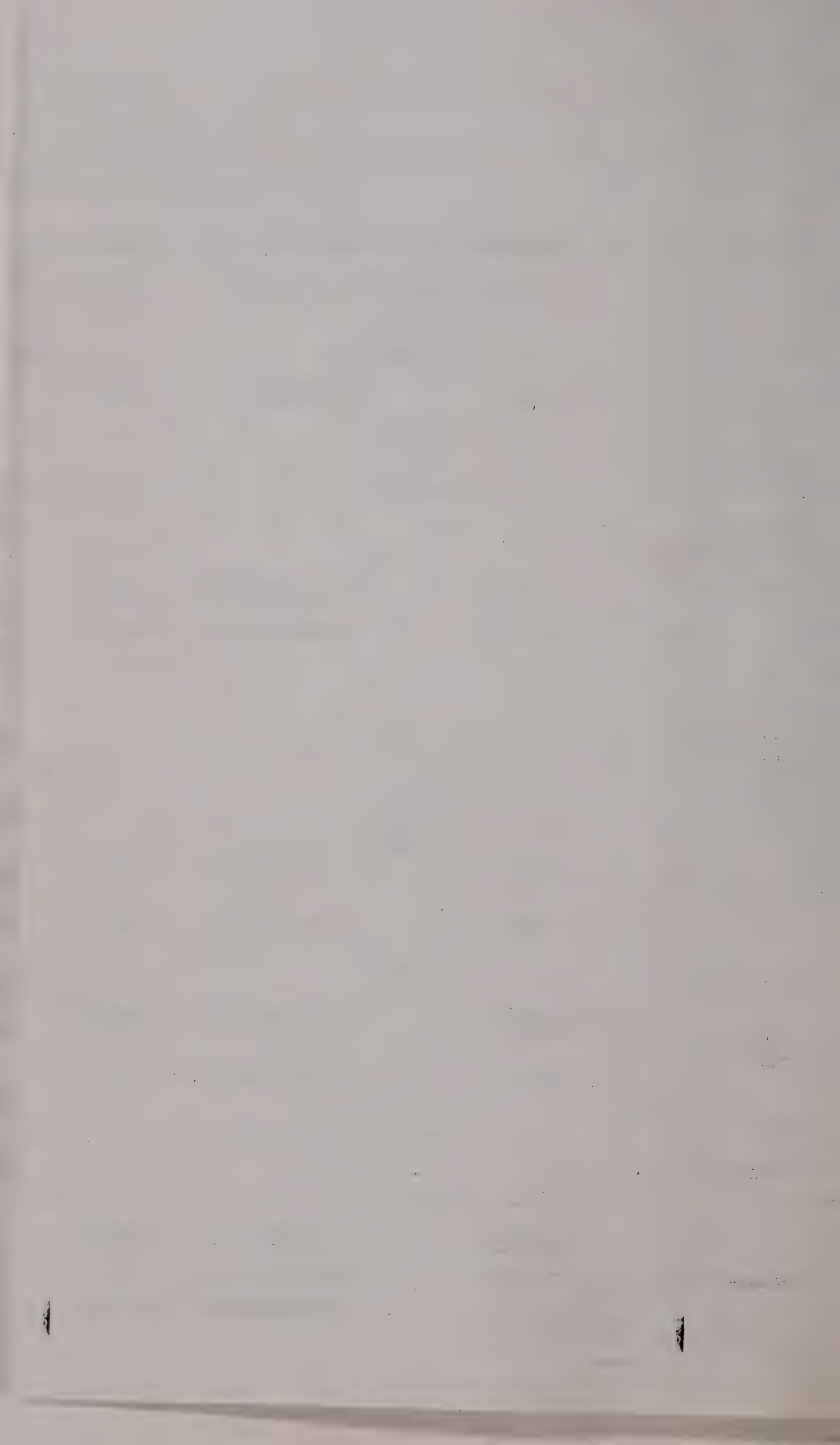
| | 1942 | 1943 | TOTAL |
|------|--------------|--------------|---------------|
| 0.52 | \$143,015.74 | \$136,976.66 | \$ 639,700.83 |
| 0.65 | 4,086.84 | 5,975.55 | 22,634.76 |
| 1.17 | \$147,102.58 | \$142,952.21 | \$ 662,335.59 |
| 7.09 | 254,643.95 | 212,256.53 | 1,159,781.39 |
| 5.92 | \$107,541.37 | \$69,304.32 | \$ 497,445.80 |

VALLEY PIPE LINE COMPANY LIMITED

COMPARATIVE STATEMENT OF REVENUE AND EXPENDITURE
FOR THE PERIOD 6TH JULY TO 31ST DECEMBER, 1939
AND FOR THE YEARS ENDED 31ST DECEMBER, 1940, 1941, 1942 AND 1943

SCHEDULE

| 6TH JULY - 31ST DECEMBER, 1939 | YEAR ENDED 31ST DECEMBER, 1940 | YEAR ENDED 31ST DECEMBER, 1941 | YEAR ENDED 31ST DECEMBER, 1942 | YEAR ENDED 31ST DECEMBER, 1943 |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| PER BBL. | PER BBL. | PER BBL. | PER BBL. | PER BBL. |
| DETAILS | DETAILS | DETAILS | DETAILS | DETAILS |
| AMOUNT | AMOUNT | AMOUNT | AMOUNT | AMOUNT |
| 3,934,748 BBL. | 7,914,680 BBL. | 9,327,507 BBL. | 9,449,928 BBL. | 8,822,450 BBL. |
| 9.4959¢ | 9.5¢ | 9.5¢ | 9.5¢ | 9.5¢ |
| \$7,105.77 | \$19,384.71 | \$25,553.12 | \$24,353.94 | \$25,669.57 |
| 7,105.77 | 19,384.71 | 25,553.12 | 24,353.94 | 25,669.57 |
| \$373,641.27 | \$751,894.71 | \$886,113.19 | \$897,743.20 | \$838,132.77 |
| 9.5¢ | 9.5¢ | 9.5¢ | 9.5¢ | 9.4¢ |
| 28,572.80 | 65,471.38 | 52,046.33 | 43,908.30 | 40,916.39 |
| .8272 | .5580 | .4646 | .4638 | .5 |
| 10.2220¢ | 10.3272¢ | 10.0580¢ | 9.9646¢ | 9.9638¢ |
| \$402,214.07 | \$817,366.09 | \$938,159.52 | \$941,651.50 | \$879,049.16 |
| 10.2220¢ | 10.3272¢ | 10.0580¢ | 9.9646¢ | 9.9638¢ |
| 107,111.36 | 233,967.29 | 301,111.94 | 319,934.72 | 331,281.30 |
| 16,464.63 | 43,110.59 | 51,367.94 | 47,321.38 | 43,092.15 |
| 155.43 | - | - | - | - |
| 123,731.42 | 277,077.88 | 352,479.88 | 367,256.10 | 374,373.45 |
| 3.5008 | 3.7790 | 3.8863 | 4.2435 | 3.5 |
| 7.0775 | 6.8264 | 6.2790 | 6.0783 | 5.7203 |
| \$27,006.60 | \$111,208.64 | \$143,958.71 | \$155,965.97 | 159,557.79 |
| 2,880.45 | 8,357.34 | 6,958.04 | 2,867.21 | 7,227.43 |
| 1.5220 | 1.5107 | 1.6180 | 1.6808 | 1.8938 |
| 59,887.05 | 119,565.98 | 150,916.75 | 158,833.18 | 167,085.42 |
| 1.5220 | 1.5107 | 1.6180 | 1.6808 | 1.8938 |
| 5.5555 | 5.3157 | 4.6610 | 4.3975 | 3.8265 |
| \$218,595.60 | \$420,722.23 | \$434,762.89 | \$415,562.22 | \$337,590.29 |
| \$40,110.00 | \$127,984.01 | \$173,105.80 | \$160,918.27 | \$125,333.76 |
| 20,000.00 | 10,000.00 | 10,000.00 | - | - |
| 60,110.00 | 137,984.01 | 183,105.80 | 160,918.27 | \$125,333.76 |
| 1.5277 | 1.7434 | 1.9630 | 1.7029 | 1.4207 |
| 4.0278¢ | 3.5723¢ | 2.6980¢ | 2.6946¢ | 2.4058¢ |
| \$158,485.60 | \$282,738.22 | \$251,657.09 | \$254,643.95 | \$212,256.53 |
| 2.4 | 2.6 | 2.6 | 2.6 | 2.6 |



VALLEY PIPE LINE COMPANY LIMITEDRate Base as at 31st, December, 1943.

| | |
|--|------------------------------|
| Plant and equipment at replacement valuation, as arrived at by McGillivray Commission, with subsequent additions at cost, less retirements | 2,051,825.71 |
| Land and rights-of-way | 17,828.00 |
| Working capital, including an amount of \$45,000.00 to cover cost of filling lines and tank bottoms | 173,000.00 |
| | <hr/> |
| | 2,242,653.71 |
| Less: Reserve for depreciation (Schedule "B-1") | 1,231,602.65 |
| | <hr/> |
| Rate base as at 31st December, 1943 | <u><u>\$1,011,051.06</u></u> |

Return on Rate Base - 1944

| | |
|---|---------------------------|
| Return on above Rate Base at 8% | \$80,884.08 |
| Additional return in respect of estimated net capital additions - 1944 (8% on \$99,770.00 for 1/2 year) | 3,990.80 |
| | <hr/> |
| Return - 1944 | <u><u>\$84,874.88</u></u> |

[illegible]

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

100

(continued)

1. *Chlorophyll a* (Chl *a*)

1990

[illegible][illegible]

100

1. 2. 3. 4. 5.

2000 年 12 月 31 日 12:00 止

Journal of Management Studies, 19(1), 67-80.

10. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1972). The total chlorophyll content was determined by the method of Arar and Johnson (1977). The carotenoid content was determined by the method of Lichtenthaler and Whistler (1972).

•

SCHEDULE "B-1"

VALLEY PIPE LINE COMPANY LIMITED

Reserve for Depreciation

| | <u>Debit</u> | <u>Credit</u> |
|--|--------------|---------------|
| As arrived at by McGillivray
Commission at 6th July, 1939 | | \$169,388.83 |
| Balance forward | | \$169,388.83 |
| Charged to operations: | | |
| 6th July - 31st Dec. 1939 | | 57,006.60 |
| Depreciation on assets retired | | |
| 6th July - 31st Dec. 1939 | \$2,774.64 | |
| Balance, 31st December, 1939 | 223,620.79 | |
| | \$226,395.43 | \$226,395.43 |
| Balance forward | | \$223,620.79 |
| Charged to operations - 1940 | | 111,208.64 |
| Depreciation on assets
retired, 1940 | \$5,479.21 | |
| Balance, 31st December, 1940 | 329,350.22 | |
| | \$334,829.43 | \$334,829.43 |
| Balance forward | | \$329,350.22 |
| Charged to operations - 1941 | | 143,958.71 |
| Depreciation on assets
retired, 1941 | \$7,447.73 | |
| Balance, 31st December, 1941 | 465,861.20 | |
| | \$473,308.93 | \$473,308.93 |
| Balance forward | | \$465,861.20 |
| Charged to operations - 1942 | | 155,965.97 |
| Depreciation on assets
retired, 1942 | \$6,329.98 | |
| Balance, 31st December, 1942 | 615,497.19 | |
| | \$621,827.17 | \$621,827.17 |
| Balance forward | | \$615,497.19 |
| Charged to operations - 1943 | | 159,557.99 |
| Depreciation on assets
retired, 1943 | \$5,384.87 | |
| Balance, 31st December, 1943 | 769,670.31 | |
| | \$775,055.18 | \$775,055.18 |

Schedule "B-1" (continued)

| | | |
|--|--------------|----------------|
| Balance as above | | \$769,670.31 |
| Add: Excess profits - Schedule "A" | | |
| 1939 | \$86,846.25 | |
| 1940 | 132,817.84 | |
| 1941 | 100,935.92 | |
| 1942 | 107,541.37 | |
| 1943 | 69,304.32 | |
| | <hr/> | |
| | \$497,445.80 | |
| Less: Costs of inquiry
to be paid by
Company | 35,513.46 | |
| | <hr/> | |
| | | 461,932.34 |
| | | <hr/> |
| Adjusted Reserve for Depreciation
31st December, 1943 | | \$1,231,602.65 |
| | | <hr/> <hr/> |

VALLEY PIPE LINE COMPANY LIMITEDCalculation of Service Rate - 1944

| | |
|---|---------------------------|
| Operating expenses as estimated by
Mr. Coultis, but omitting charges
for terminal storage | \$310,800.00 |
| Sundry and miscellaneous expenses,
based on 1943 figures | 34,200.00 |
| | <hr/> |
| | \$345,000.00 |
| Depreciation on unit method | 99,484.92 |
| Income Tax - 40% | 56,583.25 |
| Return on rate base | 84,874.88 |
| | <hr/> |
| Total revenue required | <u>\$585,943.05</u> |
| | <hr/> |
| Estimated throughput | <u>7,998,802 Barrels</u> |
| | <hr/> |
| Service rate required - 1944 | <u>7.3253¢ per Barrel</u> |
| | <hr/> |
| Service rate fixed - 1944 | <u>7.5 ¢ per Barrel</u> |
| | <hr/> |

VALUATION OF SERVICE - 1934

VALUATION OF SERVICE - 1934

Operating expenses as estimated by
the Auditor, but excluding charges
for fuel and storage

2,110,000.00

Amortization and depreciation expenses,
based on 1934 values

24,000.00

2,134,000.00

Depreciation on this asset

20,000.00

Income tax - 1934

20,000.00

Interest on this asset

20,000.00

Total revenue required

2,174,000.00

Actual revenue received

2,000,000.00

Service revenue - 1934

2,000,000.00

Service revenue - 1934

2,000,000.00

